8-9-2018

Does Physiology Play a Role in Conflict?: Exploring the Associations Between Testosterone, Accommodation, and Relationship Variables

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Testosterone, Accommodation, and Relationship Variables

Anuraj Dhillon, PhD

University of Connecticut, 2018

Recent investigations have focused on exploring the role of physiology in human communication, yet a plethora of work is required to better understand how physiology affects or is affected by relational communication and the present investigation contributes to this body of research. This study combined the tenets of communication accommodation theory (CAT), relational uncertainty, and steroid/peptide theory of social bonds (S/P theory) to examine the role of testosterone (T) in romantic partners' conflict conversation behaviors. More specifically, the study proposed that T moderates the association between romantic partners use of (non)accommodation during conflict conversations and relational uncertainty, which in turn influences their relationship satisfaction. The study also investigated how individuals' T levels fluctuate in response to their partner's use of (non)accommodation during conflict conversation.

The study tested several actor and partner moderated mediation models to reveal both antisocial *and* prosocial role of T in romantic partner's conflict communication. Results revealed that T levels moderate the actor and partner effects of perceived partner (non)accommodation on relational uncertainty differentially, and relational uncertainty mediates the association between perceptions of partner (non)accommodation and relationship satisfaction. In sum, this dissertation support the tenets of CAT and S/P theory of social bonds, and reveals the utility of combining physiology and communication theories to better understand the links between romantic partners' biology and their communication during conflict conversations. The study

Anuraj Dhillon – University of Connecticut, 2018

provides evidence that the physiology plays an integral role in romantic partners' relationships and outlines practical advice for relationship nurturance.

Keywords: Communication accommodation theory, conflict, testosterone, relational uncertainty, relationship satisfaction

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A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

at the

University of Connecticut

2018

TESTOSTERONE AND CONFLICT

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2018

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APPROVAL PAGE

Doctor of Philosophy Dissertation

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Accommodation, and Relationship Variables

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2018

Acknowledgements

I would like to thank my major advisor, Amanda Denes, for all the support and hard work that she has put in to help me develop this and many other projects over the last four years. She has consistently pushed me to my academic limits to get the most out of my doctoral experience. She has always encouraged the curious scholar in me and helped me tame the scope of my projects, which can easily get *too* broad. Thank you for being so supportive and encouraging. I wouldn't have been here without you and I couldn't have asked for a better mentor, thank you so much.

Thanks also go to my committee members, John Christensen and Shardé Davis for helping me polish and build a great project. Thank you John for introducing me to the world of communication and your guidance and wisdom, which has always seem to come at the perfect time. Thank you Shardé for encouraging and motivating me whenever I stumbled while completing this project and for bringing in different perspective to this dissertation. Big thanks to the Department of Communication for supporting my endeavors throughout the four years and for helping me fund my dissertation.

Special thanks to my family for making me resilient and letting me explore the world. The biggest amount of gratitude must go to my husband for being so supportive and taking care of our kids and me while I was working to meet deadlines. A final thanks to my beautiful kids for being so awesome and amazing. My family's support and encouragement are the part of the reason why I pushed myself to earn this degree.

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Chapter 1: Introduction

Romantic relationships are one of the most important associations that people have in adulthood. Developing and maintaining the desired intimacy level in such relationships is essential to keep them in existence (Stafford, Dainton, & Haas, 2000), and accommodative behavior may aid in this process. Accommodative behaviors refer to positively oriented or conversationally appropriate communicative behaviors, whereas nonaccommodative behaviors refer to inappropriately adjusted communicative behaviors (Dragojevic, Gasiorek, & Giles, 2016; Giles, 2008). Despite their potential importance to relational functioning, the role of accommodative processes in the development and maintenance of romantic relationships remains understudied (Zhang & Pitts, in press). One way that accommodative behavior may influence relationships is through its role in conflict management, which is identified as a relational maintenance strategy (Stafford & Canary, 1991; Stafford et al., 2000). Conflict is not inherently good or bad, but romantic partners' communication behavior during conflict determines whether the effect of conflict on the relationship is positive or negative (Sillars, Canary, & Tafoya, 2004).

Romantic partners' accommodative behavior during conflict conversations can be understood using the lens of communication accommodation theory (CAT; Giles, 2008; Giles, Coupland, & Coupland, 1991). Individuals' communication during conflict can either promote the relational goals or individual goals, sometimes at the expense of partners' goals (Canary & Spitzberg, 1989). Romantic partners' focus on relational or individual goals may determine whether they engage in accommodative or nonaccommodative communication behaviors during conflict conversations. Extant research on CAT finds that accommodative behaviors associate with positive outcomes such as conversation satisfaction and relational closeness, and nonaccommodative behaviors associate with negative outcomes such as avoidant communication

and psychological distance (Dragojevic et al., 2016; Soliz & Giles, 2014; Speer, Giles, & Denes, 2013). Furthermore, research finds that individuals' perceptions of their partners' accommodation and nonaccommodation during conflict are associated with conversation satisfaction (Dhillon et al., 2017). Given that conflict management influences relational outcomes, the present study examines whether perceptions of romantic partners' use of accommodation and nonaccommodation during conflict influences individuals' appraisals of the relationship.

In addition, a growing body of research emphasizes the role of physiology in communication (see Floyd & Afifi, 2011). Various biomarkers have been associated with communication behaviors, such as conflict and stressful conversations (Afifi, Granger, Denes, Joseph, & Aldeis, 2011; Aloia & Solomon, 2015; Dhillon et al., 2017), affectionate communication (Floyd, Hesse, & Generous, 2015), and sexual communication (Denes, Afifi, & Granger, 2016). One such biomarker that has been the focus of research on social behavior is the hormone testosterone (T) (van Anders, 2013). Recent theorizing focuses on identifying how testosterone responds to social interactions. The steroid/peptide theory of social bonds argues that T responds to social stimuli classified as competition or nurturance (S/P theory, van Anders, Goldey, & Kuo, 2011). The theory proposes that T levels may increase in response to competitive behaviors and may decrease in response to nurturant behaviors. Previous work links T to competitive behavioral contexts, such as those that involve acquiring or keeping resources (e.g., conflict conversations; Archer, 2006; Carre & Olmstead, 2015). Returning to CAT, individuals may perceive conflict interactions as competition or nurturance depending on their partners' use of accommodation and nonaccommodation, and therefore, their T levels may respond to their partners' communicative behaviors during conflict accordingly.

Although past work has identified several correlates of (non)accommodation in a variety of contexts, the research on biological correlates of communication adjustments is still at a nascent stage (Denes & Dhillon, in press; Dhillon et al., 2017). As scholars continue to explore the links between physiology and interpersonal communication, it is important to examine the role of T in accommodative processes during conflict conversations. Individuals with higher T levels are considered more aggressive and dominant and are more likely to recognize angry faces (van Anderson, Goldey, & Kuo, 2012; van Honk et al., 1999; 2001), suggesting that such individuals' may be more competitive during conflict and perceive their partners' behaviors as less accommodative (Dhillon et al., 2017). Recent research also found links between T, romantic partners' accommodative and nonaccommodative behaviors during conflict, and conversation satisfaction (Dhillon et al., 2017). Given these links, it is possible that individuals' T levels interfere with positive relational outcomes associated with their partners' use of accommodation, which may ultimately increase uncertainty about their relationship and negatively impact their relationship satisfaction.

Considering these possibilities, this dissertation examines whether testosterone polarizes individuals' perceptions about their romantic partner's use of accommodative strategies during conflict and leads to lower relationship satisfaction through heightened relational uncertainty. Furthermore, this study investigates how individuals' T levels fluctuate from pre to post conflict conversation in response to their perception of partners' conflict behavior. In sum, the present study investigates whether T interacts with individuals' perception of their romantic partners' accommodative behavior during conflict conversations to influence relational outcomes, and also examines how individuals' T levels respond to partner's conflict behaviors.

Taken together, this dissertation (1) examines accommodative processes during romantic partners' conflict conversation, (2) investigates how T influences human social interactions, and (3) explores the links between (non)accommodation and relational variables. This dissertation not only extends the utility of CAT in examining the links between physiology and romantic partners' communicative behaviors during conflict, but also intends to find empirical support for the tenets of S/P theory (van Ander et al., 2012) in the context of conflict in romantic relationships. This study expands understandings of romantic partners' communication behaviors during conflict by suggesting that communication behaviors during conflict are not only driven by one's cognition and intention, but may also be a function of their own or their partners' physiology. Indeed, communication behaviors during conflict may have repercussions for the relationships, which can be further impeded or exacerbated by physiology. This study paves the way to provide practical suggestions for couples in light of their own and their partners' physiology. For example, in couples where one or both the partners have higher than average T levels, partners may benefit from building emotional reserves by engaging in maintenance behaviors (Afifi, Merrill, & Davis, 2016) to help them buffer stress and hormones during conflict conversations.

Since this dissertation uses the existing principles of CAT to propose major hypotheses, it begins with a brief overview and history of CAT in the next chapter. This overview will help clarify the applicability of CAT in examining conflict conversations among romantic partners. Chapter 2 briefly outlines the research on physiology and communication and, more specifically, summarizes the work on testosterone. After providing the background information on CAT and the role of physiology in communication, Chapter 4 connects the major theoretical frameworks to propose specific hypotheses for the study. Chapter 5 describes the methodology used in the

dissertation to test the proposed hypotheses. It describes the study design, procedures, and measures used for assessing the key variables of the study. After outlining the methods employed in the dissertation, Chapter 6 provides detailed information on analyses and results. It includes information on how the analyses were conducted and the study findings. Finally, Chapter 7 reviews the findings of the study, outlines the study limitations, and discusses the theoretical implications of the study.

Chapter 2: Communication Accommodation Theory

Communication accommodation theory (CAT) is a post-positivistic theory that concentrates on the behavioral interaction patterns between people. CAT focuses on the coordination problem between interaction partners in a conversation and whether their responses in the conversation accentuate similarities or differences between them. CAT was originally developed in the 1970s as speech accommodation theory to examine how and why people adjust their language, dialects, and accents when interacting with others (Giles, 1973). At the early stages, the theory introduced its core concepts of accommodation: *convergence* and *divergence*. *Convergence* refers to the communicative strategies that individuals adopt to appear similar to the other in an interaction, whereas *divergence* refers to strategies that individuals employ to emphasize differences and to appear distinct or dissimilar from the other in an interaction (Dragojevic, Gasiorek, & Giles, 2015; Soliz & Giles, 2014; Williams, 1999). Convergence and divergence are evident through adjustments in verbal and nonverbal behaviors, such as shifts in language, accent, utterance length, and pitch (Dragojevic et al., 2015; Soliz & Giles, 2014). Individuals engage in convergence to seek approval, affiliation, and interpersonal similarity, as well as to reduce social distance, whereas individuals engage in divergence to highlight contrasting group identities (Soliz & Giles, 2014). The theory also proposes that speakers may engage in *maintenance*, which is sustaining one's communication pattern, regardless of the other's communicative behavior or adjustments. Individuals may engage in maintenance for reasons related to authenticity or consistency; however, recipients tend to perceive maintenance as divergence (Williams, 1999). As such, convergence is viewed favorably and considered more efficient and cooperative compared to divergence and maintenance (Soliz & Giles, 2014).

In the 1980's, the theory was applied to a variety of contexts examining intercultural and inter- and intra-generational communication (Dragojevic et al., 2015; Soliz & Giles, 2014). The scope of the theory expanded from examining speech adjustments to nonlinguistic and discursive domains (e.g., paralinguistics, smiling, gazing, etc.), representing general levels of accommodative and nonaccommodative behaviors (Soliz & Giles, 2014). Hence, the theory was renamed *communication accommodation theory*.

Today, CAT helps explain the communicative adjustments that individuals make during interactions that lead to relational, identity, and evaluative outcomes (Giles, Coupland, & Coupland, 1991; Giles & Soliz, 2015). CAT proposes that people adjust their communication based on interpersonal orientations, which are informed by their interpersonal history, goals, beliefs, and predispositions (Dragojevik et al., 2016; Gasiorek & Giles, 2012; 2013; Giles & Soliz, 2015). Specifically, the theory argues that partners engage in *accommodation* if they share a positive interpersonal history, have similar goals, and have positive perceptions of the other (Dragojevik et al., 2016; Gasiorek & Giles, 2012; 2013; Giles & Soliz, 2015). On the contrary, if partners share a negative history, have competing goals, and have negative perceptions of the other, they engage in *nonaccommodation* (Dragojevik et al., 2016; Gasiorek & Giles, 2012; 2013; Giles & Soliz, 2015). In previous work, *accommodation* has been conceptualized as convergence, appropriate accommodation, or accommodative involvement (Soliz & Giles, 2014). Similarly, previous studies conceptualize *nonaccommodation* as divergence, maintenance, reluctant accommodation (when speakers have to accommodate unwillingly, e.g., due to power or status difference), or avoidant communication (Soliz & Giles, 2014). The tenets of communication accommodation theory have been used to explain a variety of communicative adjustments in human interactions.

The next section describes the different types of accommodation strategies that interaction partners use in conversations.

Accommodation Strategies

When making adjustments in a conversation, interaction partners use different strategies based on their partners' perceived needs and characteristics (Coupland, Coupland, Giles, & Henwood, 1988; Dragojevik et al., 2015; Williams, 1999). First, individuals use *approximation strategies* by converging or diverging their verbal and nonverbal communication (such as accent, body posture, etc.) towards or away from their interaction partner (Coupland et al., 1988; Dragojevik et al., 2015). These strategies help individuals increase their similarity with or accentuate differences from the interaction partner by adjusting or maintaining their language or communication. Second, speakers use *interpretability strategies*, which are based on their interaction partners' ability to understand what is being said to them (Coupland et al., 1988; Dragojevik et al., 2015). For example, they may speak louder or at a slower pace, or decrease the diversity of their vocabulary to increase clarity. Third, individuals adopt *discourse management strategies*, such as turn taking, face-maintenance, topic sharing, or topic selection, when they are focused on their partners' conversational needs (Coupland et al., 1988; Dragojevik et al., 2015). Finally, speakers use *interpersonal control strategies* when they are focused on role relations. Interpersonal control strategies help people manage discrepancies in power or gain command of the interaction (Coupland et al., 1988; Dragojevik et al., 2015). Examples include interrupting and changing forms of address.

Interaction partners can use multiple strategies simultaneously depending on the goals and characteristics of the interaction and the interaction partner (Dragojevik et al., 2015). Moreover, the way interactants manipulate their verbal and nonverbal messages to gain

interpersonal control or power in a given scenario can either facilitate or impede the flow of the interaction (Dragojevic et al., 2015). For example, interaction partners can use the interruptions to control the conversation, or the honorifics to remind interaction partners of their relative status or role (Dragojevic et al., 2015).

Accommodation and nonaccommodation can also be objective and/or subjective (Thakerar, Giles, & Cheshire, 1982; Giles et al., 2007). *Objectivity* refers to the observable, measurable changes in verbal and nonverbal behaviors, whereas *subjectivity* refers to how the adjustments or changes are perceived by the individuals. For example, a young adult may converge towards an older adult by speaking in a high volume with a motive of accommodating; however, the older adult may perceive it as nonaccommodation because they could hear perfectly. In other instances, speakers may perceive that their behavior is convergent, when it is objectively divergent. For example, a physician may use medical terminology when describing a diagnosis to another non-doctor medical professional, whereas the medical professional might feel that the doctor is trying to maintain their higher status. In other words, objectivity and subjectivity may not always align with each other. Indeed, people make communication adjustments based on their perceptions of others' needs or behaviors, rather than others' actual needs or behaviors. Moreover, previous findings reveal that individuals' perceptions of other's behaviors better predict their attitudes during the interaction compared to the actual behavioral adjustments, suggesting that subjectivity may be more relevant than objectivity in examining consequential outcomes of accommodation and nonaccommodation (Dragojevic et al., 2015).

CAT also proposes that individuals have *affective* or *cognitive* motives when enacting accommodation or nonaccommodation (Daragojevic et al., 2015). *Affective* or identity maintenance motives refer to the use of communication adjustments to manage and regulate

social distance and to signal attitudes towards each other. Individuals' affective motives to engage in accommodation or convergence stem from their desire to affiliate with others or to maintain a positive personal and social identity, and their motives to engage in nonaccommodation or divergence originate from their wish to disaffiliate from others. Next, *cognitive* or organizational motives are related to comprehension and communicative efficiency. Under these influences, individuals are motivated to make communicative adjustments based on the needs and characteristics of the other partner. People may accommodate to facilitate comprehension and improve conversation efficiency or they may nonaccommodate to make the conversation difficult or problematic. Both affective and cognitive motives can be positive or negative, thus affecting their accommodative or nonaccommodative adjustments during conversations.

When attributed to positive motives, perceived accommodation increases recipients' satisfaction, self-esteem, and favor toward the interaction partner and their social group (Giles et al., 2007). However, the speaker and the interaction are evaluated less positively when the speaker engages in problematic communication that is attributed to negative motives or intentions (e.g., exclusion, decreasing compliance) as compared to positive motives (e.g., inclusion, increasing comprehension), or lacking intentionality (Gasiorek & Giles, 2012). In addition, perceptions of inferred motives affect the communicative behavior of the recipient, such that recipients report responding with more nonaccommodative behaviors when they attribute negative motives for speakers' nonaccommodative behaviors (Gasiorek, 2013). In sum, CAT proposes that individuals evaluate interaction partners and make adjustments in their own communication behaviors on the basis of their perceptions of the other's (non)accommodation and inferred motives.

Finally, CAT not only examines why and how people make adjustments in their interactions, but also explains the outcomes associated with these communication behaviors. Generally, research finds that accommodation and nonaccommodation are associated with evaluations of the interaction partner, quality of communication, compliance, trust, and relational solidarity (Soliz & Giles, 2014). Accommodation is positively associated with perceived attractiveness, competence, positive face and empathy, interpersonal involvement, and cooperation. On the contrary, nonaccommodation is negatively associated with all positive oriented outcomes such as relational solidarity, compliance, and trust. Instead, nonaccommodation is perceived as disrespectful, insulting, impolite, and hostile (Dragojevic et al., 2016; Soliz & Giles, 2014).

Overall, CAT provides a robust framework that can be applied to a variety of conversational scenarios to understand people's communicative behaviors and the resultant consequences of those behaviors. The application of CAT extends from intergroup communication to a wide range of applied and mediated contexts including medical, health, law enforcement, organizational communication, voicemail, texting, video chatrooms, and emails. (Soliz & Giles, 2014). As such, the applicability of CAT is not limited to the communication discipline, but also invoked in psychology, sociology, linguistics, medicine/ health, tourism, and marketing research (Dragojevic et al., 2015). Furthermore, the majority of work using CAT is quantitative in nature, but more recently, interpretive research has started applying CAT to conduct discourse analyses (Dragojevic et al., 2015).

Since its inception, CAT's propositions and conceptions have been refined and elaborated upon several times to include other verbal and nonverbal communication adjustments, intentions to make those adjustments, and the resultant outcomes (Giles & Soliz, 2015). These refinements

encompass the versatility of the theory. Recently, Dragojevic et al. (2016) offered six principles

of accommodation, building upon the four principles proposed by Giles and colleagues (2007).

The first principle states that accommodation is inherent in all interactions and is used to

facilitate interactions and manage social distance among people. Second, perceptions of

appropriate accommodation are based on interpersonal and intergroup history, the socio-

historical context of the interaction, and idiosyncratic preferences. The third principle states that

people accommodate to elicit or signal affiliation, positive feelings, or to increase message

comprehension. Fourth, positive perceived intentions to accommodate are associated with

positive outcomes, such as positive evaluations of the speaker and the interaction. Fifth, people

engage in nonaccommodation when they wish to disaffiliate or make their message difficult to

comprehend. Finally, nonaccommodation, when attributed to negative motives, leads to negative

outcomes, such as less positive appraisals of the speaker and interaction and increases in

perceived social distance, and diminishes mutual understanding. Together, these principles

emphasize the utility of CAT in forming and maintaining interpersonal and intergroup

relationships, thereby explaining and predicting the communication behaviors of interaction

partners and the consequences of such behavior.

Interestingly, CAT has not been studied much in the context of development and

maintenance of relationships (Giles & Soliz, 2015; Zhang & Pitts, in press). Accommodative

processes may play a significant role in several relationship development processes and

outcomes, such as similarity, liking, self-disclosure, and relational closeness, and they may be

salient in relationship maintenance behaviors including positivity, openness, and conflict

management (Zhang & Pitts, in press). Considering that romantic relationships are one of the

most important associations that people have and wish to maintain (Guerrero, Anderson, & Afifi,

2017), it is imperative to understand and examine the role of accommodative processes in the development and maintenance of such associations. Enduring patterns of accommodation among romantic partners may improve their relational outcomes, whereas the consistent use of nonaccommodation may impede relationship development and negatively affect relational outcomes. As previously demonstrated, perceptions of romantic partners' use of accommodative processes in conflict conversations positively associates with one's conversation satisfaction, whereas perceived nonaccommodation negatively associates with conversation satisfaction (Dhillon et al., 2017). Hence, romantic partners' perceptions of their own and partners' use of (non)accommodative behaviors during conflict may have a profound effect on their relationship.

Additionally, in the context of intergroup communication, CAT implies that people belonging to different groups use convergence, divergence, and maintenance to communicate affiliation to or disaffiliation from their interaction partner, thus promoting or impeding the future interactions (Dragojevic et al., 2015). Moreover, research finds that in intergroup conversations, speakers are more likely to converge towards a stereotypical view of the other rather than the individualized view, which can lead to nonaccommodation (Dragojevik et al., 2015). For example, when communicating with older adults, younger adults often use oversimplified language, slower speech, and exaggerated intonation, in lieu of older adults' negative age perceptions (beliefs that older people are physically or psychologically deficient) (Dragojevic et al., 2015; Harwood, 2000). Taking this perspective, it is relevant to suggest that in romantic partners' conflict conversations, men and women may converge towards the stereotypical view of their partner, which may be perceived as nonaccommodative by the other.

Furthering the applicability of CAT in intergroup domains, the theory proposes that people make communicative adjustments to manage social or group identities. Individuals

engage in accommodation or convergence when interacting with in-group members to appear similar or communicate affiliation to in-group members, whereas they engage in nonaccommodation, divergence, or maintenance when interacting with out-group members to reinforce a positive social identity or to differentiate one's self from the relevant out-group members (Dragojevik et al., 2015). Given that men and women belong to different biological sex groups, their sex group identities may play a significant role in conflict conversations among heterosexual romantic partners. Previous work notes that in male-female conversations, women accommodate more to men than men accommodate to women (Giles, 2008). Findings consistently reveal that both women and men swear at a similar level during intra-sex conversations, but that women swear more than men during inter-sex conversations to accommodate men because women expect men to swear more (Bayard, 1995). Moreover, the conflict management literature finds that in intimate relationships, women tend to be more confronting and coercive (behaviors that can be perceived as nonaccommodative), whereas men are more likely to be compromising and placating (Gottman, 2014; Hojjat, 2000). Considering the role of sex groups in heterosexual conflict conversations, CAT may suggest that women accommodate more towards men, but the extent of men and women's accommodation and nonaccommodation may be based on the salience of their gender identities in the conflict conversations, in addition to whether they wish to affiliate or disaffiliate from their partner.

Chapter 3: Physiology and communication

The connections between biology and human communication have been studied for several decades; however, communication scholars have been skeptical about the role of physiology in communication (Floyd, 2014; Floyd & Afifi, 2012). Hence, most research linking biology with communication is conducted and published in other disciplines, such as psychology, sociology, biobehavioral health, and family studies (see Floyd, 2014; Floyd & Afifi, 2012 for review). Research recognizes that individuals' communication can elicit physiological responses, which can further alter their immune system and affect their physical and psychological well-being (Afifi & Denes, 2013). Thus, interpersonal scholars have started focusing on the associations between biology and communication (Afifi & Denes, 2013). Though Beatty and McCroskey (1997) emphasized the importance of biology in communication with their "communibiological" approach decades ago, research exploring biological correlates of communication has become prominent only recently with the introduction of noninvasive and relatively cheaper measures of biological markers (Afifi & Denes, 2013; Floyd & Afifi, 2012).

Further, Floyd and Afifi (2012) argue that biology influences all interpersonal communication behaviors, but it does not imply that biological influences are universal or without exceptions. In fact, other environmental influences, such as historical, religious, racial, political, economic, and aesthetic contexts, profoundly affect interpersonal communication acts. Floyd and Afifi (2012) further suggest that biology can interact with these contextual factors to influence interpersonal behaviors. Hence, it is imperative for interpersonal scholars to take a biophysiological perspective, as it promotes the understanding of human communication behavior relative to non-conscious hormonal, neurological, or immunological processes, which are beyond conscious perceptions and interpretations (Floyd & Afifi, 2012). A biophyisiological

perspective refers to the "detailed investigation of how the body responds to and interacts with social behavior" (Floyd & Afifi, 2012, pp. 88). The relationship between biology and communication is bidirectional, such that biological processes influence particular communication behavior responses and vice-versa (Afifi & Denes, 2013; Floyd & Afifi, 2012). For example, biology affects communicative responses during stressful situations, and the way people communicate during stressful conversations influences their hormone secretions (Gottlieb, 1992). Communicative management of a stressor at the behavioral and cognitive levels can also help prevent a biological stress response (Afifi & Denes, 2012). If people are aware that their interpretations or communicative actions can be affected by their biology during interpersonal interactions, they can make conscious efforts to manage their communication in order to prevent detrimental biological responses. In sum, biological processes can influence and be influenced by interpersonal communication and the environment surrounding such interactions.

Many biological systems, outcome measures, and measurement tools have been used in social science research, and one system that is central to biophysiological communication research is the endocrine system. The endocrine system is comprised of ductless glands that produce and regulate hormones (Floyd & Afifi, 2012). Hormones are chemical messengers that influence the metabolic rates of the recipient cells (Floyd, 2014). Several hormones - testosterone, oxytocin, cortisol, vasopressin, estrogens, serotonin, prolactin. and adrenocorticotropic - are linked with a variety of verbal and nonverbal communicative behaviors such as aggression, affection, caregiving, deception, forgiveness, sexual communication, deception, conflict, oculesics, facial cues, vocalics, haptics, and emotional communication (e.g., Denes, Afifi, & Granger, 2016; Dhillon et al., 2017; for reviews, see Afifi & Denes, 2013 and

Floyd & Afifi, 2012). The focus of this chapter is on one hormone in particular—testosterone—

which may be salient in the investigation of conflict and stressful conversations.

Testosterone (T) is a steroid hormone, which is one of the major sex hormones present in

both men and women (Bos, Terburg, & van Honk, 2010). It affects skeletal muscle mass,

physical strength, body composition, sexual function, and sense of well-being (Edwards & Casto,

2013). T is produced in the adrenal glands in both sexes, the testes in men, and the ovaries and

placenta in women (Eisenegger, Haushofer, & Fehr, 2011). Generally, men have higher levels of

T compared to women, and some scholars argue that T levels can explain gender differences in

aggression, sexual violence, and risk taking (though this claim has received only partial

empirical support; Baron-Cohen, 2002; Rowe, Maughan, Worthman, Costello, Angold, 2004).

Overall, T associates with aggression, competition, and dominance, and is viewed as an

antisocial hormone that inhibits pair bonds (Eisenhegger et al., 2011; van Anders & Watson,

2006a).

Based on research with non-human animals that finds consistent associations between T

and aggression, some researchers proposed that T also predicts aggression in humans (Book,

Starzyk, & Quinsey, 2001). However, there is a lack of consensus regarding this association in

humans, as some researchers find a strong positive association between T and aggression,

whereas others find a negative association or no relationship (Archer, 1991; Book et al., 2001).

For example, van Bokhoven et al. (2006) found that individuals' T levels associated with

proactive (i.e., goal-oriented behavior to acquire a valued resource) and reactive (i.e., defensive

response to actual or perceived provocation) aggression, but Olweus and colleagues (1987)

found that T associated only with reactive aggression and not with proactive aggression.

Additionally, administration of T did not predict reactive aggression, thus, a causal link between

T and aggression was not confirmed (Eisenegger, Naef, Snozzi, Heinrichs, & Fehr, 2010).

Elsewhere, studies linking T with aggression suggest that T promotes subsequent aggressive

behavior (see Carré, McCormick, & Hariri, 2011 for review). Nevertheless, the meta-analytic

findings indicate a weak, but positive relationship between T and aggression (Archer, 1991;

Book et al., 2001).

Further, scholars contend that for humans, T is relatively more salient to the context of

dominance than aggression, as most interpersonal communication involves managing dominance

(Mazur & Booth, 1998). Dominance refers to achieving or maintaining high status or gaining

power or influence over others with no intentions to cause physical injury, whereas aggression is

characterized by intentions to cause physical harm (Edwards & Casto, 2013; Mazur & Booth,

1998). Individuals assert status in their interpersonal interactions in rather subtle ways devoid of

physical aggression, such as by staring, using dominant body posture, or having longer speech

duration (Eisenegger et al., 2011). Not only is T associated with high social dominance and

dominance behaviors in both men and women, but also with competition and increased vigilance

for status threats (Grant & France, 2005; Rowe et al., 2004; van Anders & Watson, 2006a; van

Honk et al., 1999; Wirth & Schultheiss, 2007).

Research investigating the role of T in competition finds that individuals' T levels

increase in anticipation of competition, and from before to after a competitive situation (Archer,

2006; Mehta & Josephs, 2006). Furthermore, winners record greater increases in T from pre- to

post-competition compared to losers (Archer, 2006, Carré & Olmstead, 2015). Conversely, some

winners record decreases in T and some losers record increases in T from pre- to post-

competition based on their attributions of the outcome, and these T changes further predict future

intentions to engage in competitive situations (Archer, 2006). More specifically, when the

outcome is attributed to external sources such as chance, luck, or referee decisions, winners

record a decrease in T levels and losers record an increase in T levels (Archer, 2006). Also,

increases in post-competition T predict decisions to compete again (Mehta & Josephs, 2006).

Higher baseline T not only predicts performance in an upcoming competition, but changes in

pre- to post-competition T also affect competition performance 24 hours later (Zilioli & Watson,

2014). In sum, rises in T promote competitive or aggressive behaviors aimed at defending one's

social status, reductions in T promote submissive behaviors aimed at preventing further loss of

status, and changes in T can affect human behavior long after such fluctuations have already

occurred.

   In order to understand the antisocial properties of T, scholars have examined the links

between T and recognition of threats. It is argued that T predisposes individuals to recognize

angry faces as threats to their social status and elicits a fight or flight response in receivers (Carré

& Olmstead, 2015). More specifically, individuals' T levels associate with greater vigilance to

dominance challenges and are positively associated with selective attention to angry facial

expressions, further increasing individuals' cardiac response to angry faces (van Honk et al.,

1999; Wirth & Schultheiss, 2007). Additionally, T administration increased men's perceptions of

their own facial dominance (Welling, Moreau, Bird, Hansen, & Carré, 2016). These findings

suggest that T levels may evoke approach or avoidance behaviors in response to threat

perceptions posed by angry or dominant facial expressions, such that higher T levels may lead to

aggressive approach-oriented behavior in response to signals of challenge, and lower T levels

may lead to submissive or avoidance behaviors.

   To further the evidence of T's link with threat recognition, research reveals associations

between T and interpersonal trust, empathy, and hostility (Bos et al., 2010; Schnedierman,

Kanat-Maymon, & Zagoory-Sharon, 2014). For example, T administration decreases

interpersonal trust among socially naïve individuals and impairs cognitive empathy, indexed by

decreased facial mimicry (Bos et al., 2010; Hermans, Putman, & Honk, 2006). Another study

investigating how T influences conflict behaviors found that in romantic partners' conflict, T

predicts less empathetic behavior in women (Schnedierman et al., 2014). This study also

revealed that for both men and women, high baseline T predicted greater hostility when partners'

baseline T was high, but lower hostility when partners' baseline T was low. Together, these

findings indicate that T is an antagonistic hormone that predisposes individuals to remain

vigilant and recognize the threatening behaviors of others, as well as engage in competitive or

dominant behaviors in order to gain or maintain high status or power.

T has also been examined in contexts related to pair bonding, which include partnering

(in a relationship with another individual) and sexual activity (van Anders & Watson, 2006a). A

pair bond is defined as an enduring affiliation involving sexual and emotional intimacy,

exclusivity, and a desire to be in close proximity (van Anders, Goldey, & Kuo, 2011). With

reference to relationship status, research observes that men with high T are less likely to be

married and have higher chances of marital instability, and single and divorced men have higher

T levels compared to married men with or without children (Mazur & Michalek, 1998; van

Anders & Watson, 2006). These findings have been supported for women as well; for example,

research reveals that both men and women in committed relationships have lower T than those

who are not (van Anders and Goldey, 2010; van Anders & Watson, 2007a). Women also report

being more attracted to men with higher T levels who engaged in more smiling and eye gazing

compared to men with lower T levels (see Wardecker, Smith, Edelstein, & Loving, 2015 for

review). Other findings suggest that T negatively associates with relationship variables, such as

commitment, satisfaction, and relationship quality (Edelstein, van Anders, Chopik, Goldey, & Wardecker, 2014). The study also finds a moderating effect of partners' baseline T, such that the negative association between T and relationship variables was stronger for individuals whose partners had lower T. Together, these findings reveal the incompatibility of high T with maintaining pair bonds. Higher T may be helpful in initiating relationships or attracting mates, considering that single men have higher T and women are more attracted to men with higher T. However, high T levels may be detrimental in maintaining those relationships due to the propensity for engaging in competitive and aggressive behaviors. As such, lower T may facilitate affiliative behaviors in committed relationships.

It is also imperative to address the sex differences (or a lack thereof) in T research. Most research on T has been conducted with male samples owing to their higher levels of T; however the evidence also supports a strong association between T and social behavior for women (Archer, 2006; Book et al., 2001; Eissenhegger et al., 2011; van Ander et al., 2011; van Anders, 2013). Scholars argue that women may even be more sensitive to the behavioral effects of T (van Anders & Watson, 2006a). For example, the association between T and aggression is relatively stronger for women than men (Archer, Graham-Kevan, Davies, 2005). Other work investigating the links between T and communication behavior among romantic partners reports significant findings for women, but not for men (e.g., Dhillon et al., 2017; Peters, Hammond, Reis, Jamieson, 2016). Extant research also finds that women's T levels positively associate with aggression, dominance, and competition (Archer, 2006; Grant & France, 2001). Similar to men, women with higher levels of T are more sensitive to threats and challenges, more likely to recognize angry faces, more assertive, have higher occupational status, and exhibit less interpersonal trust (Archer, 2006; Bos et al., 2010; van Anders et al., 2013). Although some

similarities exist in the associations among women's and men's T and human behavior, differences also emerge. As such, Carre and Olmstead (2015) suggest that investigating sex differences and similarities may enable a greater understanding of T's role in social interactions. Considering these findings, it may be worthwhile to examine the influence of sex when looking at the links between T and human behavior.

To summarize, T can be viewed as an individual difference variable, where those with higher T are considered more aggressive and dominant, and those with lower levels of T are considered affiliative and submissive (van Anders et al., 2011). In addition, T changes in anticipation of, during, and after competitive situations, and changes in T regulate future behavior (Archer, 2006; Book et al., 2001; Eisenegger et al., 2011). In relationships, commitment is associated with lower T levels and T is associated with a variety of relationship outcomes (Wardecker et al., 2015). Higher levels of T promote antisocial, aggressive, and competitive behaviors and lower levels of T evoke prosocial, affiliative behaviors.

T may also play an important role in romantic partners' communication. One context, where T may be especially relevant is romantic partners' conflict conversations. During conflict conversations, romantic partners try to negotiate incompatible needs and goals (Canary & Spitzberg, 1989). As such, they may perceive status and dominance threats during conflict when trying to negotiate competing needs and goals. In addition, partners may have to maintain status or engage in dominance behaviors to acquire or maintain resources. Given that T is linked with dominance and aggression, it is important to consider the influence of T on romantic partners' behaviors and perceptions during conflict, as well as the effect of communication during conflict on T levels.

Chapter 4: The Present Study

This chapter reviews the literature on CAT and testosterone relevant to conflict in romantic relationships and proposes specific hypotheses that will be tested in the current study.

Communication Accommodation Theory and Conflict

Communication accommodation theory (CAT) can provide an appropriate framework to examine conflict conversations. CAT helps explain the communicative adjustments that individuals make during interactions that lead to relational, identity, and evaluative outcomes (Giles et al., 1991; Giles & Soliz, 2015). As noted in Chapter 1, the theory broadly categorizes individuals' communicative adjustments during interpersonal interactions into two categories: *accommodation*, which encompasses accommodative behaviors appropriately adjusted to the needs of the partner, and *nonaccommodation*, which encompasses over and under accommodative behaviors that are inappropriately adjusted to the needs of the partner (Giles, 2008; Soliz & Giles, 2014). *Underaccommodation* occurs when individuals' communicative behaviors fail to incorporate the needs of their partner, and *overaccommodation* occurs when individuals try too hard to accommodate and overshoot their partner's needs and desires (Dragojevic et al., 2015; Soliz & Giles, 2014). As stated earlier, CAT posits that individuals decide to engage in accommodation or nonaccommodation based on their positive or negative interpersonal history, similar or competing goals, and positive or negative perceptions of the interaction partner (Dragojevik et al., 2016; Gasiorek & Giles, 2012; 2013; Giles & Soliz, 2015). Because CAT helps explain attuning strategies of individuals in interactions, it may be useful in examining romantic partners' conflict behaviors and their associated consequences.

Conflict is defined as an expressed struggle of incompatible interests, goals, values, or beliefs between interdependent partners (Canary, Cunningham, & Cody, 1988; Putnam, 2006).

Individuals' behavior during conflict falls into three distinctive orientations: integrative, distributive, and avoidant (Canary & Cupach, 1988; Canary & Spitzberg, 1989). An integrative approach refers to communication that promotes relational goals; a distributive approach refers to communication that pursues individual goals at the expense of partners' goals; an avoidant approach refers to denying the presence of conflict (Canary & Spitzberg, 1991). Integrative and distributive orientations involve explicit discussions of conflict, whereas an avoidant orientation involves minimizing explicit acknowledgement or discussion of conflict. Behaviors associated with an integrative orientation are perceived as communicatively competent and appropriate, and those associated with a distributive orientation are perceived as incompetent and dissatisfying (Canary Cupach, & Serpe, 2001; Lakey & Canary, 2002). Canary and Cupach (1988) note that the avoidant approach is most inconspicuous, and therefore romantic partners with an avoidant approach may not even engage in an explicit discussion of the conflict. Partners taking an avoidant approach may therefore avoid engaging in explicit discussions about the conflict, but for romantic partners who do engage in a conflict conversation, they may adjust their communicative behaviors based on their integrative or distributive orientation. In terms of CAT, during conflict conversations, romantic partners with an integrative orientation may enact accommodative or positive behaviors and those with a distributive orientation may engage in nonaccommodative or negative behaviors, which in turn may influence relational quality indicators.

CAT and Relational Quality Indicators

The communicative behaviors of romantic partners during conflict may further influence their perceptions of the quality of their relationship. One relational quality indicator that may be influenced by partners' behaviors during conflict is relational uncertainty. Research has long

established that relational uncertainty is persistent beyond initial stages of development and is

manifest in established relationships; in fact, relational uncertainty corresponds with the

experiences of conflict (Siegert & Stamp, 1994; Solomon & Knobloch, 2001). Relational

uncertainty refers to "the degree of confidence people have in their perceptions of involvement

within interpersonal relationships" (Knobloch & Solomon, 2003, p. 282). It emerges from three

overlapping, but distinct sources of ambiguity within relationships: *self*, *partner,* and *relationship*

(Knobloch & Solomon, 1999). *Self uncertainty* refers to the doubts people have about their own

involvement in the relationship, *partner uncertainty* is defined as the doubts or questions that

people have about their partner's involvement in the relationship, and *relationship uncertainty* is

the extent to which partners are unsure about the nature or future of their relationship. It is

argued that individuals' perceptions of their partners' communicative behaviors during conflict

may increase or decrease their doubts about involvement in the relationship.

In conflict conversations, relational uncertainty may be a consequence of accommodation

and nonaccommodation. CAT explains resultant consequences of such communication

adjustments. More specifically, accommodation is associated with positive outcomes, and

nonaccommodation is associated with negative outcomes (Dragojevik et al., 2016; Giles, 2008;

Soliz & Giles, 2014). Positive outcomes refer to prosocial outcomes such as sociability,

attractiveness, positively valenced appraisals, communicative responsiveness, communication

satisfaction, intimacy, closeness, and life satisfaction, which facilitate interpersonal cooperation

and improve individual well-being (see Soliz & Giles, 2014 for review). For example, people

may engage in accommodation to signal positive face and empathy, respect, understanding,

compliance, cooperation, or affiliation, and they may engage in nonaccommodation to indicate

disrespect, hostility, or disliking (Dragojevik et al., 2016; Gasiorek & Giles, 2012; Giles, 2008;

Giles & Soliz, 2015; Soliz & Giles, 2014). Indeed, the recipients of accommodation perceive

greater connection, relational solidarity, communication and relationship satisfaction, and

interpersonal trust, and appraise their partners more positively (Aguilar et al., 2016; Dhillon et

al., 2017; Giles, Willemyns, Gallois, & Anderson, 2007; Harwood, 2000; Soliz & Giles, 2014;

Speer et al., 2013). On the contrary, recipients of nonaccommodation perceive disaffection,

dissatisfaction, and psychological distance, and appraise their partners negatively (Dhillon et al.,

2017; Gasiorek & Giles, 2012, 2013; Soliz & Giles, 2014; Speer et al., 2013).

Considering these associations, individuals who perceive their partners as

accommodating are more likely to appraise their relationships in a positive light, whereas those

who perceive nonaccommodation are more likely to appraise their relationships negatively.

Moreover, relational uncertainty associates with a variety of negative outcomes, such as more

severe appraisals of face threats, perceived relationship damage, negative conflict strategies, and

negative emotions (King & Theiss, 2016; Knobloch, Miller, & Carpenter, 2007; Knobloch,

Satterlee, & DiDomenico, 2010; Theiss, Knobloch, Checton, & Magsamen- Conrad, 2009;

Theiss & Nagy, 2012). Taken together, it is likely that individuals who perceive their partners'

behavior during conflict as accommodative will feel more certain about their overall involvement

in the relationship, and therefore, may report lower relational uncertainty (i.e., self, partner, and

relationship uncertainty). Conversely, individuals perceiving their partners' conflict behavior as

nonaccommodative may begin to question the relational involvement, and thus, perceive greater

relational uncertainty. Thus, the following hypotheses are put forth:

H1: Perceptions of partner accommodation will negatively associate with relational

uncertainty (self, partner, relationship).

H2: Perceptions of partner nonaccommodation will positively associate with relational

uncertainty (self, partner, relationship).

Previous work finds strong evidence that relational uncertainty negatively influences

individuals' perceptions of their relationships (Solomon, 2016; Solomon & Knobloch, 2004;

Theiss & Solomon, 2006). More specifically, individuals grappling with relational uncertainty

report lower relationship quality and satisfaction (Knobloch, 2008; Knobloch & Knobloch-

Fedders, 2010; Knobloch & Theiss, 2011; Theiss & Knobloch, 2014). Even though past research

provides ample evidence linking relational uncertainty to relationship satisfaction, it is necessary

to investigate whether this association will hold true in the context of conflict conversations.

Romantic partners' accommodation and nonaccommodation during conflict have been

linked with their satisfaction with the conflict conversation (Dhillon et al., 2017). However, it is

unclear whether romantic partners' accommodative behavior during conflict will also influence

their general relationship satisfaction, and whether relational uncertainty mediates the association

between communicative behaviors of romantic partners during a conflict conversation and

relationship satisfaction. In other words, individuals' perceptions of their romantic partners'

accommodative or nonaccommodative behaviors during conflict may predict their relational

uncertainty, which in turn predicts their relationship satisfaction. Specifically, individuals who

perceive their partners' behavior as accommodative should report greater relationship

satisfaction due to lower perceptions of relational uncertainty, and individuals who perceive their

partners' behavior as nonaccommodative should report lower levels of relationship satisfaction

due to higher perceptions of relational uncertainty. Hence, the following hypotheses are

advanced:

H3: Relational uncertainty (self, partner, relationship) will negatively associate with

relationship satisfaction following romantic couples' conflict conversations.

H4: Relational uncertainty (self, partner, relationship) will mediate the association

between perceptions of partner accommodation and relationship satisfaction, such that

the higher individuals' perceptions of partner accommodation, the lower their reported

relational uncertainty, and the greater their relationship satisfaction.

H5: Relational uncertainty (self, partner, relationship) will mediate the association

between perceptions of partner nonaccommodation and relationship satisfaction, such

that the higher individuals' perception of partner nonaccommodation, the higher their

reported relational uncertainty, and the lower their relationship satisfaction.

This paper not only examines the influence of communicative behaviors during conflict on

perceptions of relationship variables, but also investigates the moderating effect of individuals' T

levels.

Testosterone and Conflict

As noted in Chapter 3, a growing body of research reinforces T's role in social

interactions, especially those involving competition for valued resources and social status

(Archer, 2006; Carre & Olmstead, 2015; Dhillon et al., 2017; Eisenegger, Haushofer, & Fehr,

2011; Peters, Hammond, Reis, & Jamieson, 2016; Roney & Gettler, 2015). As a reminder, T is

positively associated with success in competition for resources and dominance, and negatively

associated with pair bonding (Bos, Terburg, & vanHonk, 2010; Eisenhegger et al., 2011).

Conflict interactions may pose a threat to an individual's social and relationship status, as well as

valued resources. Therefore, T may play a pivotal role in conflict interactions and influence

individuals' approach to conflict.

During conflict conversations, romantic partners engage in a variety of competitive and cooperative behaviors to negotiate a shared view, or at least the coexistence of discrepant views (Canary & Cupach, 1988; Canary & Spitzberg, 1990; Cupach, 1982). Given that T increases the likelihood of competitive encounters (van Anders & Watson, 2006), it may predispose individuals to take a competitive approach during conflict, which in turn may polarize their perceptions of partners' accommodation and nonacccommodation during conflict.

Baseline T, Accommodation/ Nonaccommodation, and Relational Outcomes

As detailed in Chapter 3, T associates with a variety of trait measures. For example, T positively associates with masculinity, aggression, and dominance (Archer, 2006; Grant & France, 2005; Rowe et al., 2004) and negatively associates with femininity, nurturance, and submission (Eisenegger et al., 2011; Maner, Miller, Schmidt, & Eckel, 2008; van Anders et al., 2011). Additionally, low T associates with empathy and facilitates affiliation, while high T associates with hostility and shifts the focus from affiliation to competition (Hermans, Putnam, & van Honk, 2006; Schneiderman, Kanat-Maymon, Zagoory-Sharon, & Feldman, 2014; Wardecker, Smith, Edelstein, & Loving, 2015). T also increases individuals' vigilance for status threats and dominance challenges, such that the higher individuals' T levels, the more likely they are to pay attention to angry faces and recognize threatening or competitive behavior of others (Bos et al., 2010; Eisenegger et al., 2011; van Honk et al., 1999; Wirth & Schultheiss, 2006). Thus, higher T levels may increase individuals' vigilance for partners' competitive behaviors, and lower T may facilitate affiliation by making them recognize partners' cooperative behaviors.

From the perspective of CAT, romantic partners' competitive and cooperative behaviors during conflict may be characterized as accommodation and nonaccommodation, respectively. Recent work examining conflict interactions using CAT as a framework also reveals important

gender differences. For women, there is a negative association between T and perceptions of partner accommodation, and T predicts satisfaction with a conflict conversation through perceptions of partner accommodation (Dhillon et al., 2017). The study also revealed a moderating role of T. For men with higher T, perceiving partner nonaccommodation was more strongly linked to less satisfaction with the conflict conversation. Furthermore, for women whose partners had higher T, perceiving partner nonaccommodation was more strongly linked to less satisfaction with the conflict conversation. Like nonaccommodation, T also negatively associates with many relational outcomes such as nurturing behavior, relationship satisfaction, commitment, and interpersonal trust, suggesting that T does not foster maintenance of nurturing social relationships (Bos et al., 2010; Edelstein et al., 2014; Wardecker et al., 2015). It is therefore possible that T may predispose individuals to perceive their partners' behavior during conflict as nonaccommodative, thus increasing their relational uncertainty. Similarly, individuals with lower levels of T may perceive their partners' behavior as accommodative and in turn, report lower relational uncertainty. Hence, the following hypotheses are proposed:

H6: Baseline testosterone will a) negatively predict perceptions of partner accommodation, and b) positively predict perceptions of partner nonaccommodation.

H7a: Baseline testosterone will moderate the negative association between partner accommodation and relational uncertainty (self, partner, relationship), such that individuals with higher T will have a weaker negative association between perceptions of partner accommodation and relational uncertainty, as compared to those with lower T.

H7b: Baseline testosterone will moderate the positive association between partner nonaccommodation and relational uncertainty (self, partner, relationship), such that individuals with higher T will have a stronger positive association between perceptions of

partner nonaccommodation and relational uncertainty, as compared to those with lower

T.

The S/P Theory of Social Bonds and Accommodation/Nonaccommodation

Previous work has focused on examining baseline levels of T to understand individual

differences by exploring the associations between T and various trait measures, such as

aggression and dominance (van Anders, 2013). However, the steroid/peptide theory of social

bonds (S/P theory) argues that T is not just a trait measure, but that the hormone responds to

social stimuli and plays an important role in social interactions (van Anders et al., 2011). The S/P

theory summarizes the research on T to suggest that T can respond differently based on the

context, which can be categorized as competition or nurturance. In conflict conversations,

relational partners' may engage in competing behaviors when they are only concerned about

their own needs and are unwilling to negotiate, while they may engage in nurturing behaviors

when they are concerned about both partners' needs and goals and are willing to work out the

differences. Accommodation may be aligned with nurturing behaviors, where individuals show

concern for their partners' needs, and nonaccommodation may be aligned with competing

behaviors, where individuals focus more on their own needs, rather than their partners' needs.

Given this alignment of accommodation and nonaccommodation during conflict conversations

with competition or nurturance, individuals' T levels may fluctuate in response to their partners'

communicative behavior during conflict.

The S/P theory posits that the categorization of social behaviors as competition and

nurturance may help explain their associations with T (van Anders et al., 2011). The theory links

competition with high T and nurturance with low T. In other words, behaviors that promote

social bonds (e.g., grooming, nurturing, and comforting) are linked with low T, whereas

behaviors that inhibit social bonds (e.g., competing for resources or status) are linked with high T (van Anders, 2013; van Anders et al., 2011). Partners' accommodation, where individuals communicate positive feelings, respect, and closeness (Dragojevik et al., 2016), may be perceived as nurturance. Conversely, partners' nonaccommodation, where individuals' signal disrespect, disliking, and psychological distance (Soliz & Giles, 2014), may be perceived as competition.

Consistent with S/P theory, individuals' T levels may react to their partners' communicative behaviors during a conflict conversation based on their perceptions of their partners' use of accommodation and nonaccommodation during conflict. Research provides evidence that T levels increase from before to after a competitive situation (Archer, 2006; Carre & Olmstead, 2015). Thus, individuals may experience an increase in T from pre- to post conflict conversation in response to their partners' use of nonaccommodation, and may demonstrate a decrease in T as a response to their partners' use of accommodation. Thus, the following hypotheses are advanced:

H8: Perceptions of partner accommodation will negatively predict individuals' T levels post conflict, controlling for baseline T before conflict conversation, such that the more individuals perceive partner accommodation, the less their T levels post-conversation.

H9: Perceptions of partner nonaccommodation will positively predict individuals' T levels post conflict, controlling for baseline T before conflict conversation, such that the more individuals perceive partner nonaccommodation, the greater their T levels post-conversation.

Overall, this study examines the associations among physiology, communication behaviors during conflict conversations, and relational quality indicators. Guided by

communication accommodation theory, steroid/ peptide theory, and the relevant research on T, the study proposes several hypotheses in order to understand the role of physiology in romantic partners' conversations. It is already known that partners' conflict behaviors help them maintain their relationships and affect their appraisals of the relationship indicators. Thus, this study aims to identify whether romantic partners' communication behaviors during difficult conversations are a function of their T levels and whether individuals' T levels fluctuate in response to their partners' communication behaviors during such conversations. In sum, the present study emphasizes the role of biological correlates in human behavior and the findings of the study will advance the utility of communication accommodation and steroid peptide theories in examining the role of T in romantic partners' conflict communication.

The next chapter outlines the methods used to test the hypotheses proposed in the present study.

Chapter 5: Methods

This chapter outlines the methodology employed in the present study to examine the role of T in romantic partners' conflict interactions. This study investigates the moderating role of testosterone in conflict conversations and examines the associations between romantic partners' communicative behavior and their appraisals of relational uncertainty and relationship satisfaction. The proposed study also investigates reactivity in individuals' testosterone levels post conflict conversation, as influenced by their romantic partners' use of accommodative and nonaccommodative behaviors while discussing a conflict-inducing topic.

Participants

Given the interdependence of romantic partners' behaviors in any given interaction, the study recruited romantic dyads rather than individual participants in order to explore both the actor and partner effects associated with the proposed hypotheses. An actor effect refers to the effect of a person's independent variable on that person's dependent variable, whereas a partner effect refers to the effect of a person's independent variable on their partner's dependent variable (Kenny, Kashy, & Cook, 2006).

The study participants were recruited from undergraduate communication and sociology courses at a large public university. Undergraduate participants from introductory communication course were compensated with research credit, whereas undergraduate participants from other communication and sociology courses were compensated with course credit and $15 cash per couple. Participants were informed that they must currently be in a committed, monogamous, romantic relationship of at least 3 months that involves weekly sexual activity (i.e., "below the belt" activity) with their partner to be eligible for the study, which was a requirement for a separate but related study that was part of the larger project. The participants

were also screened for being in good health, and they must not 1) have been suffering from any

acute or chronic illness, 2) have an endocrine disorder, 3) been currently or have previously

undergone chemotherapy, 4) been on any anti-anxiety, anti-psychotic, antidepressant, or mood

stabilizing medications, and 5) been taking anti-inflammatory steroid based medications or on

any hormone replacement therapies (not including hormonal birth control).

The sample consisted of 50 heterosexual couples ($N = 100$). The total sample included 50

women and 50 men, who ranged in age from 18 to 31 years old ($M = 19.91$, $SD = 1.81$). The

majority of participants identified as white ($n = 61$), followed by Hispanic and Latina/o ($n = 17$),

Asian ($n = 11$), mixed race ($n = 8$), Black or African American ($n = 2$), and "other" ($n = 1$). The

average relationship duration of couples was 16 months ($range = 3 – 70$ months).

Procedure

Eligible participants received an online link to sign up for the study, and they were

assigned a code (e.g., first couple: 1A, 1B; second couple: 2A, 2B; etc.). After assigning the

codes, participants received an email describing the details of the study and a link to complete an

online survey hosted on SurveyMonkey.com. This initial survey asked participants' to provide

consent to participate in the study and provide demographic and relational information and

measured items unrelated to the present study. Upon completion of the initial survey, participants

were asked to schedule a time to visit the Interpersonal Interaction Lab. All lab appointments

were 1 hour each and were scheduled between 1pm – 6pm to avoid capturing fluctuations in

hormone levels that happen at different hours of the day. Couples were asked to decide on a time

together before scheduling, and an email was sent to both partners confirming their lab time. A

reminder email confirming their appointment was sent 24 hours before their lab visit with

instructions on how to get to the lab and how to prepare for their lab visit. Participants were told

that they must refrain from consuming alcohol, caffeine, nicotine, medication, dairy, or any food 1 hour prior to coming to the lab and that they must abstain from exercising or teeth brushing 1 hour before coming to the lab. Additionally, each partner was asked to complete an online pre-survey including health-related items and measures irrelevant to the present study.

Upon arrival in the lab, participants were asked if they ate or consumed liquids within the previous 2 hours and if they did, they were instructed to drink a cup of water and wait 10 minutes before proceeding with the study. Otherwise, participants were asked to rinse their mouth with water and wait 5 minutes. Couples were seated in the interaction room and the lab procedures were explained and consent was obtained. They were reminded that the lab visit consisted of collecting saliva samples, a conflict conversation, and a post-conversation survey. After providing consent, participants provided 1 ml of whole saliva by passive drool method, which involved drooling into a vial/ tube using a saliva collection aid. The saliva was immediately frozen until it was shipped overnight on dry ice to the Institute for Interdisciplinary Salivary Bioscience Research (IISBR) at University of California, Irvine (UCI) for assessment.

Next, the participants were instructed to independently list three issues on a topic-listing sheet that they are comfortable discussing in the lab and that have caused conflict and stress in their relationship over the past month (Afifi, Afifi, Merill, Denes, & Davis, 2013). For each topic, participants were asked to complete six Likert-type items that asked them how severe, stressful, anxiety-producing, and important they perceived the topic to be. Next, the partners shared their list of issues with each other and were instructed to decide on one of the listed issues that they would like to discuss further during a 10-minute conversation (in line with previous research; e.g., Aloia & Solomon, 2015; Gottman et al., 1977). The couples were encouraged to choose the most stressful topic that they feel comfortable discussing. After the couples decided

on a topic, they were informed that they would have 10 minutes to talk about the chosen issue. The researcher left the room and did not come back until (1) the participants told the researcher that they were done or (2) 10 minutes were up. All couples were able to choose a topic and most utilized the full time for discussion.

After completing the conflict conversation, participants were asked to provide a post-conversation saliva sample. Following this, the participants independently completed a post-lab survey via SurveyMonkey.com on a laptop assessing the communication that just occurred and their relationship. The post-survey consisted of measures pertaining to perceived partner accommodation and nonaccommodation during the conflict conversation, relational uncertainty, relationship satisfaction, and perceived severity and realness of the conflict conversation. Participants were then debriefed, paid (if getting cash), and thanked for their participation.

Measures

Demographics. Participants were asked demographic items regarding their sex, age, sexual orientation, relationship duration, and race/ethnicity in the initial survey.

Perceived partner (non)accommodation. Perceptions of partner's accommodative and nonaccommodative behavior during conflict were measured using the modified version of the 20-item scale developed by Speer et al. (2013). Participants were asked to assess their partner's behavior during conflict with a list of items preceded by the stem, "During the conversation that I just had with partner, my partner…". The items were presented on a Likert scale with 1 = "strongly disagree" and 7 = "strongly agree." High score indicated greater perception of partner's (non)accommodation.

Perceived partner accommodation ($M = 5.53$, $SD = .99$) consisted of 9 items (e.g., "showed respect for me", "let me express my own opinions") and had a Cronbach's alpha of .86.

Perceived partner nonaccommodation (M = 2.11, SD = 1.14) consisted of 10 items (e.g. "made angry complaints", "treats me like an amateur") and had a Cronbach's alpha of .93.

  Salivary testosterone. Saliva samples were assayed for T using a commercially available immunoassay without modification to the manufacturer's recommended protocol (Salimetrics, Carlsbad, CA). T was assayed in saliva samples that were collected at two time points: the first sample was collected upon arrival at the lab and the second sample was collected immediately after the conflict conversation, in line with previous studies (Edwards & Casto, 2013). Baseline testosterone was measured with the saliva sample taken upon arrival at the lab and post conflict testosterone was measured with the saliva sample collected immediately after the conflict conversation (Edwards & Casto, 2013). The analysis of T through saliva samples has been shown to be a reliable and noninvasive biomarker in the social sciences (see Bos et al., 2010; Granger et al., 2004 for review).

  For both assays, test volume was 50 μL with a range of sensitivity from 1 to 600 pg/mL. All saliva samples were tested in duplicate and intra- and inter-assay coefficients of variation were on average less than 10% and 15%, respectively. The correlation for T between the first and second assays was r = .99, p < .01, and T values were averaged across assays. The distribution of T values was positively skewed, and thus raw scores were subject to logarithm (Ln) transformation (Granger et al., 2007a). Ln scores were used in all analyses, but raw scores (pg/mL) are reported in Tables 1-2 when noting the means and correlations for T for ease of understanding. As expected, women had lower baseline T (Time 1) levels (M = 75.19 pg/mL, SD = 33.28) than men (M = 167.13 pg/mL, SD = 54.81), t(98) = -10.14, p < .001. The range of T levels was similar to what was observed in the previous work: Baseline T (*range* = 27.75 –

285.13 pg/mL, M = 121.16 pg/mL, SD = 64.57) and post-conversation T (*range* = 26.17 – 364.65

pg/mL, M = 126.58 pg/mL, SD = 72.16)

Relational uncertainty. The extent to which partners were uncertain about their

relationship was measured using a shortened version of Knobloch and Solomon's (1999)

measure of relational uncertainty (Theiss & Solomon, 2006). Participants were asked to indicate

their level of agreement with statements that followed the question stem ("After the conversation

you just had with your partner, how certain are you about …?") on a Likert type scale with

anchors ranging from 1 (*completely uncertain*) to 6 (*completely certain*). All items were reverse

coded so higher scores indicate greater uncertainty. The measure consisted of three dimensions –

self uncertainty (6 items, M = 1.83, SD = 1.12, e.g., " how much you like your partner?"),

partner uncertainty (6 items, M = 1.92, SD = 1.26, e.g., "how important this relationship is to

your partner?"), and relationship uncertainty (8 items, M = 1.87, SD = 1.11, e.g., "whether you

and your partner will stay together"). The Cronbach's alpha for both self uncertainty and partner

uncertainty was .97, and for relationship uncertainty was .96.

Relationship satisfaction. Relationship satisfaction of romantic partners was assessed

after the conflict conversation using Hendrick's (1988) measure of relationship satisfaction. The

scale consisted of 7 items measured on 5-point Likert type scale with 1 (less satisfied) to 5 (more

satisfied). Participants responded to items such as, "how well does your partner meets your

needs?" and "how good is your relationship compared to most?" Two reverse coded items ("how

many problems are there in your relationship?" and "how often you wished you hadn't gotten

into this relationship?") were recoded, and one item was deleted for low reliability. The

Cronbach's alpha for 6 item scale was .85 (M = 4.29, SD = .59, a = .85).

Perceived severity of topic, and realness of the conflict. After the conflict conversation, participants responded to one item asking how severe they believed the topic they discussed to be; higher scores indicated more severe topics ($M = 3.03$, $SD = 1.15$). Participants also responded to one item indicating how real the conflict conversation felt, with higher scores indicating that the conversation felt more real ($M = 4.12$, $SD = .81$).

Gender Salience. Gender salience is defined as "the cognitive state wherein someone self-defines themselves as a member of their collective gender group" (Palomares, 2000, pp. 540). The participants' gender salience during the conflict conversation was measured using a modified version of the measure from Palomares (2000). The participants responded to nine items followed by the stem "…during the conversation", using a Likert scale anchoring from 1 (strongly disagree) to 7 (strongly agree). Example items included "I was thinking about being male or female" and "I thought that my gender came into play". Two reverse coded items were deleted due to low reliability. The composite scale consisted of 7 items, where higher score indicated greater gender salience during the conflict conversation ($M = 2.37$, $SD = 1.43$, $\alpha = .92$).

After collecting the data, the next step was to analyze the data and test the proposed hypotheses. The next chapter describes the analyses and results obtained from the analyses of data.

Chapter 6: Analyses and Results

The present study examines testosterone's role in romantic partners' conflict conversations. It is proposed that individuals' testosterone levels may predict their perceptions of their partner's conflict communication behaviors, characterized as accommodative and nonaccommodative, and further influence their appraisals of relational uncertainty and relationship satisfaction. In addition, the study proposes that individuals' T levels may change in response to their perceptions of their partner's accommodation and nonaccommodation during conflict conversations.

Preliminary Analyses

Before testing the hypotheses, the data were screened for outliers, normality, and missing values. Missing values were less 1% of the total data and they were found to be missing at random (Little MCAR test: $\chi^2(770) = 831.41$, $p = .07$) and were thus imputed using expected maximization (EM) algorithm in SPSS. Therefore, all data from all participants were used for the analyses. As noted earlier, T scores were positively skewed and therefore, subject to natural log transformation. Next, bivariate correlations were run among all the variables used in the study. Table 1 contains the correlations among all variables used in the study separately for men and women and Table 2 contains correlations between men's and women's scores on the same variables.

As noted earlier, to determine whether the content of participants' conflict conversations was stressful for couples to discuss, they were asked to indicate how severe and stressful they believed the topic discussed to be on a 5 point Likert type scale, with higher scores indicating that the topic was more severe and stressful. Participants reported that the topics they discussed were moderately to highly severe ($M = 3.04$, $SD = 1.15$) and moderately stressful ($M = 2.95$, SD

= 1.21). Participants were also asked to indicate the extent to which they felt that the

conversation was real and they indicated that they felt the conversation was quite real (M = 4.12,

SD = .81).

Primary Analyses

In order to test the proposed hypotheses, dyadic data was collected from 50 heterosexual

romantic couples. Individuals are nested within the dyads and the residuals are non-independent,

thus violating one of the major assumptions of general linear modeling. To address these

concerns, structural equation modeling (SEM) was employed guided by the assumptions of the

Actor Partner Interdependence Model (APIM, Kenny et al., 2006). SEM was run through

Analysis of Moment Structures (AMOS v.25). As noted earlier, the dyads were heterosexual and

thus, they were distinguishable by participant sex. To resolve the issue of dependency in the data,

the residuals in the models were allowed to covary.

Proposed Models

Several hypotheses were combined together to test in a single path model, focused on

partner accommodation. H1 states that perceptions of partner accommodation would negatively

associate with relational uncertainty; H3 states that relational uncertainty (self, partner,

relationship) would positively associate with relationship satisfaction following romantic

couples' conflict conversations; H4 states that relational uncertainty would mediate the

association between perceptions of partner accommodation and relationship satisfaction; H7a

states that baseline levels of time 1 T would moderate the association between perceptions of

partner accommodation and relational uncertainty. Taken together, these hypotheses can be

tested together with a moderated mediation model (Model 1, see Figure 1). The proposed model

1 combines H1, H3, H4, and H7a, where baseline T moderates the association between

perceptions of partner accommodation and relational uncertainty (self, partner, relationship), and relational uncertainty (self, partner, relationship) mediates the association between perceptions of partner accommodation and relationship satisfaction.

The second moderated mediation model (Model 2, see Figure 2) combines H2, H3, H5, and H7b and focuses on partner nonaccommodation. The proposed model 2 hypothesizes that perceptions of partner nonaccommodation would negatively associate with relational uncertainty (self, partner, relationship) (H2) and this association would be moderated by baseline testosterone (H7b), and that relational uncertainty (self, partner, relationship) would positively associate with relationship satisfaction and mediate the association between perceptions of partner nonaccommodation and relationship satisfaction (H5).

Before describing the analyses of the proposed models, it is necessary to understand mediation and moderation in APIM. When analyzing mediation for distinguishable dyads using APIM, there are six actor effects (a1 through a6) and six partner effects (p1 through p6); each person in the dyad has three actor effects and three partner effects (see Figure 3) (Ledermann, Macho, & Kenny, 2011). Dyads are distinguishable if there is a variable that allows differentiation between the dyad members, such as heterosexual couples in which partners can be distinguished by their biological sex (Kenny et al., 2006). The three actor effects for each person in the distinguishable dyad are as follows: effect of actor's independent variable (X1) on actor's mediator variable (M1), effect of actor's mediator variable (M1) on actor's dependent variable (Y1), and effect of actor's independent variable (X1) on actor's dependent variable (Y1). The three partner effects are: effect of actor's independent variable (X1) on partner's dependent variable (Y2), the effect of actor's independent variable (X1) on partner's mediator variable (M2), and the effect of actor's mediator variable (M1) on partner's dependent variable (Y2). In

addition, independent variables of both actor (X1) and partner (X2) are correlated and the

residuals of both partners' dependent variable (e1, e2), and mediator variables (e3, r4) are

allowed to covary. An illustration of the APIM mediation is illustrated in Figure 3.

Testing moderation in an APIM involves calculating multiple interaction terms (Garcia,

Kenny, & Ledermann, 2015). For each person in the dyad, two interaction terms are calculated:

1) the interaction between the person's own independent (X1, X2) variable scores and the

person's score on moderator variable (X1M1, X2M2); 2) the interaction between the person's

own independent variable scores (X1, X2) and the partner's score on moderator variable (M2)

(X1M2, X2M2). In the APIM moderation model (see Figure 4), the two independent variables

(X1, X2), two moderator variables (M1, M2), and four interaction terms: X1M1, X1M2, X2M1,

X2M4 are regressed on the dependent variables (Y1, Y2). All eight exogenous variables, namely

X1, X2, M1, M2, X1M1, X1M2, X2M1, and X2M4 are correlated and the residuals (e1, e2) of

the dependent variables (Y1, Y2) are correlated in order to account for the nonindependence in

the data. The moderation effects in this model are: 1) the actor effect moderated by the actor's

moderated variable (X1M1 → Y1and X2M2 → Y2); 2) the actor effect moderated by the

partner's moderator variable (X1M2 →Y1 and X2M1 → Y2); 3) the partner effect moderated by

the actor's moderator variable (X2M1 → Y1, X1M2 → Y2); 4) the partner effect moderated by

the partner's moderator variable (X2M2 → Y1, X1M1 → Y2).

For testing the proposed models, the tenets of APIM mediation and APIM moderation

were combined to test the models visualized in Figure 5 and 6. Due to the small sample size,

concerns about power, and to avoid the multicollinearity issues, the models in Figure 5 and 6

were tested separately for each of the three dimensions of relational uncertainty – self, partner,

and relationship uncertainties. In total, six separate APIM moderated mediation models were

tested. Two models tested self uncertainty as a mediator of the perceptions of partner

(non)accommodation, two models tested partner uncertainty as a mediator of the perceptions of

partner (non)accommodation, and the final two models tested relationship uncertainty as a

mediator of the perceptions of partner (non)accommodation. Model fit was evaluated based on a

set of a-priori cut-off statistics for each of the fit indices: $\chi^2/df < 3$, root mean square error of

approximation (RMSEA) < .09; comparative fit index (CFI) > .90 (Bentler, 1990; Browne &

Cudeck, 1993; Kline, 1998). As noted above, in order to test the moderation hypotheses in

APIM, the following interaction terms were created (Garcia et al., 2015):

> 1) interaction (Accommodation_M X Testo_M) between men's accommodation score
>
> (Accommodation_M) and men's testosterone scores (Testosterone_M),
>
> 2) interaction (Accommodation_M X Testo_W) between men's accommodation scores
>
> and women's testosterone levels (Testosterone_W),
>
> 3) interaction (Accommodation_W X Testo_W) between women's accommodation
>
> scores (Accommodation_W) and testosterone scores (Testosterone_W),
>
> 4) interaction (Accommodation_W x Testo_M) between women's accommodation scores
>
> and men's testosterone score,
>
> 5) interaction (Nonccomm_M X Testo_M) between men's nonaccommodation score
>
> (Nonaccomm_M) and men's testosterone scores (Testosterone_M),
>
> 6) interaction (Nonaccomm _M X Testo_W) between men's nonaccommodation scores
>
> and women's testosterone levels (Testosterone_W),
>
> 7) interaction (Nonaccomm _W X Teso_W) between women's nonaccommodation
>
> scores (Nonaccomm _W) and testosterone scores (Testosterone_W), and

8) interaction (Nonaccomm _W x Testo_M) between women's nonaccommodation

scores and men's testosterone score,

Perceived Partner Accommodation and Self Uncertainty Model

The first model tested whether time 1 testosterone moderated the association between

perceptions of partner accommodation and self-uncertainty, and whether self-uncertainty

mediated the association between perceived partner accommodation and relationship satisfaction.

The model fit the data well χ^2 (12) = 14.91, p = .25, χ^2/df = 1.24, RMSEA = .07; CFI = .99;

however, the model had several insignificant paths. After removing multiple insignificant paths

except those associated with the interactions (Garcia et al., 2015; Kline, 2011), the accepted

model fit the data well, χ^2 (19) = 19.76, p = .41, χ^2/df = 1.04, RMSEA = .03; CFI = 1.00 (see

Figure 7). The interaction of men's perceived partner accommodation and women's T levels

(actor effect, β = .89, p < .001) and the interaction of women's perceived partner accommodation

and women's T levels (partner effect, β = -.64, p < .001) both associated with men's self

uncertainty. In other words, women's T scores moderated 1) the actor effect of men's

perceptions of partner accommodation and 2) the partner effect of women's perceptions of

partner accommodation on men's self uncertainty. The higher the T levels of women, the

stronger the association between men's perceptions of partner accommodation and their self

uncertainty, and the weaker the association between women's perceptions of partner

accommodation and men's self uncertainty.

Next, the interaction of women's perceived partner accommodation and men's T levels

(actor effect, β = -.61, p < .01), men's perceived partner accommodation (partner effect, β = -.77,

p < .001), and the interaction of men's perceived partner accommodation and men's T levels

(partner effect, β = .58, p < .01) each associated with women's self uncertainty. The more men

perceived their female partners to be accommodative during the conflict conversation, the lower

the female partner's reported self uncertainty. However, men's T levels moderated this effect,

such that the higher men's T levels, the stronger was the association between men's perceived

partner accommodation and women's self uncertainty. Moreover, men's T levels moderated the

effect of women's perceived accommodation on their self uncertainty, such that the higher the T

levels of women's male partner, the weaker the association between their perceptions of partner

accommodation and self uncertainty,

Men's self uncertainty ($\beta = -.64$, $p < .001$) and women's self uncertainty ($\beta = -.30$, $p <$

.05) associated with men's relationship satisfaction. The higher men's and women's self

uncertainty, the lower men's relationship satisfaction post conflict. In path modeling, if the direct

path from X to Y is not significant, but the paths through the mediator are significant, that

indicates that full mediation has occurred. Thus, the model revealed that men's and women's self

uncertainty fully mediated the association between women's perceived partner accommodation

and men's relationship satisfaction, such that the more women perceived partner accommodation

during conflict conversation, the lower the men's and women's self uncertainty, and the higher

the men's relationship satisfaction.

Furthermore, women's self uncertainty ($\beta = -.33$, $p < .01$), men's self uncertainty ($\beta = -$

.33, $p < .01$), and men's perceived partner accommodation ($\beta = .32$, $p < .001$) associated with

women's relationship satisfaction. The greater men's reported self uncertainty, the less their

female partner's reported being satisfied with the relationship. Also, because there was a direct

path from men's accommodation to women's satisfaction, women's self uncertainty partially

mediated the association between men's perceived partner accommodation and women's

relationship satisfaction, such that the higher men's perceived partner accommodation during the conflict, the lower women's self uncertainty, and the higher women's relationship satisfaction.

Overall, the moderated mediation model for accommodation and self uncertainty revealed that partners' T levels moderated the actor and partner effects of perceived partner accommodation on self uncertainty, and that self uncertainty mediated the associations between partners' perceived partner accommodation and relationship satisfaction. In other words, partners' T levels influenced the effect of one's own as well as their partner's perceived accommodation on one's self uncertainty, which further mediated the association between partners' perceptions of accommodation and one's own relationship satisfaction.

Perceived Partner Nonaccommodation and Self Uncertainty Model

The second model tested the moderated mediation APIM with perceived partner nonaccommodation as the independent variable, time 1 testosterone as the moderator, self uncertainty as a mediator, and relationship satisfaction as the dependent variable. The model fit the data well χ^2 (12) = 11.45, p = .49, χ^2/df = .95, RMSEA = .00; CFI = 1.00; however, the model had several insignificant paths. After deleting insignificant paths, the model was respecified. The accepted model fit the data well, χ^2 (14) = 12.90, p = .53, χ^2/df = .92, RMSEA = .00; CFI = 1.00 (see Figure 8). The interaction of men's perceived partner nonaccommodation and women's T levels (actor effect, β = -37, p < .05) and women's perceived partner nonaccommodation (partner effect, β = .45, p < .05) each associated with men's self uncertainty. The higher women's T levels, the weaker the association between their male partner's perceptions of partner nonaccommodation and self uncertainty. The higher women's perceptions of partner nonaccommodation, the higher men's self uncertainty. Next, women's perceived partner nonaccommodation (actor effect, β = .33, p < .05) associated with women' self uncertainty, such

that the higher women's perceptions of partner nonaccommodation, the higher their self

uncertainty.

Men's perceptions of partner nonaccommodation (actor effect, β = -.22, p < .05), men's

self uncertainty (actor effect, β = -.41, p < .01), and women's self uncertainty (partner effect, β =

-.26, p < .05) each associated with men's relationship satisfaction. The more men perceived their

partners to be nonaccommodative during the conflict conversation and the greater men's self

uncertainty post-conversation, the lower their relationship satisfaction post conflict. Also, the

higher women's self uncertainty, the lower men's relationship satisfaction post conflict. Men's

self uncertainty also mediated the association between women's perceptions of partner

nonaccommodation and men's relationship satisfaction. In other words, the higher women's

perceptions of partner nonaccommodation, the higher men's self uncertainty, which in turn

predicted lower relationship satisfaction for men. On the other hand, women's self uncertainty

(actor effect, β = -.50, p < .001), men's perceived partner nonaccommodation (partner effect, β =

-.27, p < .01), and men's self uncertainty (partner effect, β = -.27, p < .01) each associated with

women's relationship satisfaction. The higher women's and men's self uncertainty and the

higher men's perceptions of partner nonaccommodation, the lower women's relationship

satisfaction. Women's self uncertainty also mediated the association between men's perceptions

of partner nonaccommodation and women's relationship satisfaction, such that the more men

perceived their partner's behavior as nonaccommodative during the conflict conversation, the

more women reported self uncertainty, and the lower women's reported relationship satisfaction

post conflict.

In sum, the model revealed that women's T scores moderated the actor effect of

perceived partner nonaccommodation on men's self uncertainty. No significant interaction effect

for women's self uncertainty was found; only the main partner effect of men's perceived partner

nonaccommodation on women's self uncertainty was significant. Additionally, women's self

uncertainty mediated the association between men's perceived partner nonaccommodation and

women's relationship satisfaction.

Perceived Partner Accommodation and Partner Uncertainty Model

The third model tested whether time 1 testosterone moderated the association between

perceptions of partner accommodation and partner uncertainty, and whether partner uncertainty

mediated the association between perceived partner accommodation and relationship satisfaction.

Although the model fit the data well χ^2 (12) = 13.55, p = .33, χ^2/df = 1.13, RMSEA = .05, CFI =

.99, the model contained an array of insignificant paths. After removing insignificant paths, the

accepted model had a good fit, χ^2 (23) = 28.89, p = .18, χ^2/df = 1.26, RMSEA = .07; CFI = .99

(see Figure 9).

The interaction of men's perceived partner accommodation and men's T levels (actor

effect, β = -.29, p < .05), the interaction of men's perceived partner accommodation and

women's T levels (actor effect, β = .30, p < .05), women's T levels (partner effect, β = .27, p <

.01), women's perceived partner accommodation (partner effect, β = -.91, p < .001), the

interaction of women's perceived partner accommodation and men's T levels (partner effect, β =

.46, p < .001), and the interaction of women's perceived partner accommodation and women's T

levels (partner effect, β = -.67, p < .001) all associated with men's partner uncertainty. The more

women perceived their partner's conflict behavior as accommodative, the lower men's partner

uncertainty; however, this association was moderated by both men's and women's T scores. The

higher men's T levels, the weaker the association between their perceived partner

accommodation and partner uncertainty, but the stronger the association between women's

perceived partner accommodation and men's relationship uncertainty. In other words, for men

with higher T, the actor effect of perceived partner accommodation was weaker and the partner

effect was stronger compared to those with lower T levels. The higher women's T levels, the

stronger the association between men's perceptions of partner accommodation and their partner

uncertainty, but the weaker the association between women's perceptions of partner

accommodation and their partner uncertainty. When women had higher T levels, the actor effect

of men's perceived partner accommodation was stronger and the partner effect of women's

perceived partner accommodation was weaker in comparison to women with lower T levels.

Next, men's perceived partner accommodation (partner effect, $\beta = -.58$, $p < .001$) associated with

women's partner uncertainty. The more men perceived their partner's behavior as

accommodative during conflict conversation, the less partner uncertainty women reported.

Further, men's partner uncertainty mediated the association between women's perceived

partner accommodation and both men's and women's relationship satisfaction. The more women

perceived partner accommodation during conflict, the lower men's partner uncertainty post

conflict, and the higher both men's and women's relationship satisfaction. Similarly, women's

partner uncertainty mediated the association between men's perceptions of partner

accommodation and both men's and women's relationship satisfaction. The more men perceived

their partner's behavior as accommodative during conflict, the less women reported being

uncertain about their partner's involvement, and the more relationship satisfaction both women

and men reported post conflict.

In summary, the model testing found that both men's and women's T scores moderated

the actor and partner effects of perceived partner accommodation on men's partner uncertainty,

and that partner uncertainty mediated the association between men's and women's perceived

partner accommodation and men's relationship satisfaction. No significant interaction effect for women's partner uncertainty was found; only the main partner effect of men's perceived partner accommodation on women's partner uncertainty was significant.

Perceived Partner Nonaccommodation and Partner Uncertainty Model

The fourth model tested the moderated mediation APIM with perceived partner nonaccommodation as the independent variable, time 1 testosterone as the moderator, partner uncertainty as a mediator, and relationship satisfaction as the dependent variable. The model fit the data well χ^2 (12) = 10.06, p = .61, χ^2/df = .84, RMSEA = .00; CFI = 1.00; however, the model had several insignificant paths. After removing insignificant paths, the model was respecified. The accepted model fit the data well, χ^2 (9) = 6.96, p = .69, χ^2/df = .71, RMSEA = .00; CFI = 1.00 (see Figure 10).

Women's perceived partner nonaccommodation (partner effect, β = .48, p < .001) associated with men's partner uncertainty. The more women perceived their partner's behavior to be nonaccommodative during conflict conversation, the higher men's reported partner uncertainty. The lower men's T levels, the weaker was this association. Men's perceived partner nonaccommodation (partner effect, β = .67, p < .01) and the interaction of men's perceived partner nonaccommodation and men's T levels (partner effect, β = -51, p < .05) each associated with women's partner uncertainty. The more men perceived partner nonaccommodation during conflict, the higher women's reported partner uncertainty. However, this effect was weaker for women whose male partner's had higher T levels. In other words, the higher men's T levels, the weaker the association between women's perceived partner nonaccommodation and partner uncertainty.

Next, both men's and women's partner uncertainty was associated with men's and women's relationship satisfaction. Furthermore, men's partner uncertainty fully mediated the associations between women's perceived partner nonaccommodation and men's and women's relationship satisfaction. The more women perceived partner nonaccommodation during the conflict conversation, the higher men's partner uncertainty and the lower both men's and women's relationship satisfaction. Women's partner uncertainty fully mediated the associations between men's perceived partner nonaccommodation and men's and women's relationship satisfaction. The more men perceived their partner's behaviors during the conflict as nonaccommodative, the higher women's reported partner uncertainty and the lower men's and women's relationship satisfaction.

The model testing found that men's T scores moderated the partner effect of perceived partner nonaccommodation on women's partner uncertainty. However, no significant interaction effect of T on men's perceived partner nonaccommodation was found. Additionally, partner uncertainty mediated the association between perceived partner nonaccommodation and relationship satisfaction.

Perceived Partner Accommodation and Relationship Uncertainty Model

The fifth model tested whether time 1 T moderated the association between perceptions of partner accommodation and relationship uncertainty, and whether relationship uncertainty mediated the association between perceived partner accommodation and relationship satisfaction. Although the model fit the data well χ^2 (12) = 13.66, p = .32, χ^2/df = 1.14, RMSEA = .05; CFI = 1.00, the model contained an array of insignificant paths. After removing insignificant paths, the accepted model had a good fit, χ^2 (12) = 16.79, p = .16, χ^2/df =1.40, RMSEA = .09, CFI = .98 (see Figure 11).

The interaction of men's perceived accommodation and women's T levels (actor effect, β = .82, p < .001), women's perceived partner accommodation (partner effect, β = -.41, p < .05), and the interaction of women's perceived partner accommodation and women's T levels (partner effect, β = -.65, p < .01) each associated with men's relationship uncertainty. The more women perceived their partner's conflict behavior as accommodative, the lower relationship uncertainty men reported post conflict. Women's T levels; however, moderated this effect. The higher women's T levels, the stronger the association between men's perceptions of partner accommodation and men's relationship uncertainty, but the weaker the association between women's perceptions of partner accommodation and men's relationship uncertainty.

Next, men's perceptions of partner accommodation (partner effect, β = -.57, p < .05) associated with women's relationship uncertainty. The more men perceived partner accommodation, the lower women's relationship uncertainty.

Men's relationship uncertainty (actor effect, β = -.32, p < .01) and women's relationship uncertainty (partner effect, β = -.37, p < .01) also associated with men's relationship satisfaction. The more men and women were uncertain about the relationship, the lower men's relationship satisfaction. Women's relationship uncertainty (actor effect, β = -.45, p < .001), men's relationship uncertainty (partner effect, β = -.32, p < .001), and men's perceived partner accommodation (partner effect, β = .25, p < .001) each associated with women's relationship satisfaction. The more women and men were uncertain about the relationship, and the lower men's perceived partner accommodation during the conflict conversation, the lower was women's relationship satisfaction post conflict. Men's relationship uncertainty mediated the association between women's perceived partner accommodation and both men's and women's relationship satisfaction. The more women perceived their partner's behavior as accommodative

during conflict, the lower men's relationship uncertainty, and the higher men's and women's relationship satisfaction post conflict. Similarly, women's relationship uncertainty mediated the association between men's perceived partner accommodation and men's and women's relationship satisfaction. The more men perceived their partner to be accommodative during the conflict conversation, the lower women's relationship uncertainty, and the higher men's and women's relationship satisfaction.

Overall, the model revealed that women's T scores moderated the actor and partner effects of perceived partner accommodation on relationship uncertainty. However, no evidence was found for the direct or moderating effects of men's T scores. Moreover, relationship uncertainty fully mediated the associations between women's perceived partner accommodation and men's and women's relationship satisfaction. However, men's perceived partner accommodation had a direct effect on women's relationship satisfaction.

Perceived Partner Nonaccommodation and Relationship Uncertainty Model

The sixth model tested the moderated mediation APIM with perceived partner nonaccommodation as the independent variable, time 1 testosterone as the moderator, partner uncertainty as a mediator, and relationship satisfaction as the dependent variable. The model fit the data well χ^2 (12) = 11.65, p = .47, χ^2/df = .97, RMSEA = .00; CFI = 1.00; however, the model had several insignificant paths. After removing insignificant paths, the model was respecified. The accepted model fit the data well, χ^2 (13) = 17.51, p = .18, χ^2/df = 1.35, RMSEA = .08; CFI = .98 (see Figure 12).

The interaction of men's perceived partner nonaccommodation and women's T levels (actor effect, β = -.42, p < .05), women's perceived partner nonaccommodation (partner effect, β = -.66, p < .001), and the interaction of women's perceived partner nonaccommodation and

women's T levels (partner effect, $\beta = .33$, $p < .05$) each associated with men's relationship

uncertainty. The more women perceived their partner to be nonaccommodative during the

conflict conversation, the higher the men's relationship uncertainty. The higher women's T

scores, the weaker the association between men's perceived partner nonaccommodation and

men's relationship uncertainty, but the stronger the association between women's perceived

partner nonaccommodation and men's relationship uncertainty. Women's perceptions of partner

nonaccommodation (actor effect, $\beta = .52$, $p < .001$) also associated with their relationship

uncertainty. The higher women's perceptions of partner nonaccommodation during conflict

conversation, the higher their relationship uncertainty post conflict.

Further, men's relationship uncertainty (actor effect, $\beta = -.38$, $p < .01$) and women's

relationship uncertainty (partner effect, $\beta = -.37$, $p < .01$) both associated with men's relationship

satisfaction. The more men and women were uncertain about the relationship, the lower was

men's relationship satisfaction. Similar actor ($\beta = -.55$, $p < .001$) and partner effects ($\beta = -.40$, p

$< .01$) were found for relationship uncertainty predicting women's relationship satisfaction. The

more women and men reported being uncertain about their relationship, the lower their

relationship satisfaction. Interestingly, men's relationship uncertainty mediated the association

between women's perceived partner nonaccommodation and relationship satisfaction. The more

women perceived their partner's behavior as nonaccommodative during conflict, the greater

men's relationship uncertainty and the lower men's relationship satisfaction.

The model testing found a moderating effect of women's T levels on the association

between men's and women's perceived partner nonaccommodation and men's relationship

uncertainty. Relationship uncertainty also mediated the association between women's perceived

partner nonaccommodation and men's and women's relationship satisfaction. However, no

significant mediation effects for the association between men's perceived partner nonaccommodation and relationship satisfaction were found.

To summarize, H1 stated that perceptions of partner accommodation would predict relational uncertainty negatively, and H2 stated that perceptions of partner nonaccommodation would predict relational uncertainty positively. As predicted, H1 and H2 were supported for actor or partner effects (or both) for all models. H3, which stated that relational uncertainty would negatively associate with relationship satisfaction post conflict, was supported for all models. All dimensions of relational uncertainty (i.e., self, partner, and relationship uncertainties) associated with relationship satisfaction. As predicted in H4 and H5, relational uncertainty mediated the associations between perceived partner (non)accommodation and relationship satisfaction for all models. In some models, relational uncertainty fully mediated the association, while in others it partially mediated the association. One association was not mediated: men's perceived partner accommodation had direct associations with women's relationship satisfaction in the self uncertainty model. H7 stated that T would moderate the association between perceived partner (non)accommodation and relational uncertainty. As detailed above, all models provided support for moderation. Either the actor's and/or partner's T moderated the actor and/or partner effect of perceived partner (non)accommodation on relational uncertainty.

Testosterone and Perceived Partner (Non)Accommodation Models

H6a and H8, and H6b and H9 were combined and tested using the tenets of APIM. The first model tested whether baseline T (time 1) negatively associated with perceived partner accommodation (H6a) and whether perceived partner accommodation negatively predicted changes in T from pre to post conversation (H8) (see Figure 13). The model did not fit the data

well, χ^2 (3) = 31.25, p = .00, χ^2/df = 10.42, RMSEA = .44, CFI = .85. After removing

insignificant paths, the accepted model fit the data well, χ^2 (4) = 4.95, p = .29, χ^2/df = 1.24,

RMSEA = .07, CFI = .99. The model revealed that women's time 1 T negatively associated with

women's perceived partner accommodation (β = -.29, p < .05). The higher women's T before the

conflict conversation, the lower they perceived their partners' behavior to be accommodative

during the conflict conversations. Also, men's time 1 T associated with men's time 2 T (β = .93,

p < .001) and women's time 1 T associated with women's time 2 T (β = .87, p < .001).

Moreover, the higher individuals' T before the conflict conversation, the higher their T post

conflict conversation. Hence, H6a was partially supported and H8 was not supported.

The second model tested whether baseline T (time 1) positively associated with perceived

partner nonaccommodation (H6b) and whether perceived partner nonaccommodation positively

predicted changes in T from pre to post conversation (H9) (see Figure 14). The model did not fit

the data well, χ^2 (3) = 19.56, p = .00, χ^2/df = 6.52, RMSEA = .34; CFI = .91. After removing

insignificant paths, the accepted model fit the data well, χ^2 (7) = 8.42, p = .30, χ^2/df = 1.20,

RMSEA = .06; CFI = .99. The model revealed that women's time 1 T positively associated with

women's perceived partner nonaccommodation (β = .36, p < .01) and men's T positively

associated with men's perceived partner nonaccommodation (β = .30, p < .05). The higher

women's T before the conflict conversation, the more they perceived their partners' behavior to

be nonaccommodative during the conflict conversations and the higher men's T before conflict,

the more they perceived women's behavior to be nonaccommodative during the conflict

conversations. Also, men's time 1 T associated with men's time 2 T (β = .93, p < .001) and

women's time 1 T associated with women's time 2 T (β = .87, p < .001). Moreover, the higher

individuals' T before the conflict conversation, the higher their T post conflict conversation.

Thus, H6b was supported for both the actors and H9 was not supported.

Post-hoc Analyses

Although this study did not focus on gender, given that CAT is an intergroup

communication theory and data in this dissertation consisted of heterosexual couples, it was

anticipated that participants' gender salience might play a role in romantic partners' perceptions

of conflict conversations (Giles, 2008). During conflict conversations involving discussions

about incompatible needs and goals, romantic partners' gender or sex identity might become

more salient and may affect the way they communicate during conflict conversations. As stated

in Chapter 2, CAT suggests that individuals accommodate to the stereotypical view of the other

and women tend to accommodate more to men than vice-versa (Dragojevik et al., 2015; Giles,

2008). However, women report engaging in more negative behaviors during conflict, such as

coercive and threatening behaviors, whereas men report engaging in more positively oriented

behaviors such as compromise, negotiation, and reconciliation behaviors (Hojjat, 2000). Thus, it

may be worthwhile to examine whether gender salience affects the way women and men

perceive their partner's accommodative and nonaccommodative behaviors during conflict.

First, an independent samples t-test was conducted to examine differences in women's

and men's perceptions of (non)accommodation. The results revealed no differences between men

and women in terms of their perceptions of partner (non)accommodation. Next, to investigate the

association between gender salience and perceived partner (non)accommodation, two actor

partner interdependence models were run using SEM. The first model tested the associations

between gender salience and perceptions of partner accommodation. The model was saturated (df

$= 0$), hence, the fit indices were not calculated. Additionally, none of the path coefficients were

significant. The model was respecified by removing the insignificant partner effects: women's

gender salience → men's perceived partner accommodation; men's gender salience → women's

perceived partner accommodation. The model was rerun and the data fit the model well, but none

of the paths were significant (χ^2 (2) = .29, p = .86, χ^2/df = .15, RMSEA = .00; CFI = 1.00).

The second model investigated the associations between gender salience and perceptions

of partner nonaccommodation. Again, the model was saturated and the fit indices were not

calculated. After removing the insignificant partner effects, the model was rerun. The resulting

model fit the data well, χ^2 (2) = .51, p = .78, χ^2/df = .25, RMSEA = .00; CFI = 1.00. The model

revealed that women's gender salience positively associated with their perceptions of partner

nonaccommodation (β = .25, p < .05). The more women felt that their gender was salient during

the conflict conversations, the more they perceived their partner's behavior as

nonaccommodative during the conflict conversations. To summarize, gender salience did not

associate significantly with men's perceptions of partner (non)accommodation, but it

significantly associated with women's perceptions of partner nonaccommodation.

The next chapter discusses the findings and their theoretical implications, as well as

limitations of the study and future research avenues.

Chapter 7: Discussion and Conclusion

Given that romantic relationships are one of the most important associations that people have and that the conflict in such associations is inevitable, examining romantic partners' communication during conflict conversations is at the heart of interpersonal communication research (Guerrero et al., 2017). A growing body of research emphasizes that physiology plays an important role in a range of interpersonal interactions, including conflict communication, communicating about stress, sexual communication, and affectionate communication (Floyd & Afifi, 2011). Building upon this line of work and guided by the tenets of communication accommodation theory (CAT; Giles, 2008) and the steroid/peptide theory of social bonds (S/P theory; van Anders et al., 2012), the present study examined the role of testosterone (T) in romantic partners' conflict conversations and tested whether individuals' T levels fluctuate in response to their perceptions of their partner's communication behavior during conflict. Specifically, the proposed models hypothesized that romantic partners' T levels prior to a conflict conversation would moderate the association between perceptions of partner (non)accommodation and relational uncertainty, and that relational uncertainty would mediate the association between perceived partner (non)accommodation and relationship satisfaction. In other words, the study examined whether T polarizes perceptions of partner communication behavior during conflict conversations and in turn influences relational quality indicators. Moreover, it was hypothesized that romantic partners' perceptions of partner (non)accommodation would predict changes in their T levels from pre- to post conflict conversation. As detailed in the previous chapter, several actor partner interdependence models were to run to test the proposed hypotheses and the findings revealed support for most of the hypothesized associations.

CAT asserts that more than the objective qualities of the behavior, it is the perceptions of the behavior that characterize it as accommodative or nonaccommodative (Dragojecik et al., 2015). Both the enactor and the recipients' perceptions of accommodative and nonaccommodative behaviors are important when considering the resultant consequences of accommodation and nonaccommodation (Soliz & Giles, 2014). Additionally, the interdependent nature of romantic relationships reinforces the importance of exploring both the actor and partner effects when investigating romantic partners' conflict conversations. Recent investigations of T and relational uncertainty have focused on dyadic patterns and provide evidence that considering the actor and partner effects can enable better understanding of T's role in relational communication and help identify unique associations among relational uncertainty, partner behavior, and relationship quality indicators (Edelstein et al., 2014; Knobloch & Theiss, 2010; 2011).

Baseline T and Perceived Partner (Non)Accommodation

As hypothesized, women's T levels associated negatively with women's perceptions of partner accommodation and positively with women's perceptions of partner nonaccommodation. The higher women's T levels, the less they reported perceiving their partner's behavior as accommodative and the more they reported perceiving their partner's behavior as nonaccommodative during the conflict. Men's T levels positively associated with men's perceptions of partner nonaccommodation, such that the higher men's T levels, the more they perceived their partner's behavior as nonaccommodative during the conflict conversation. Such findings suggest that both men's and women's T levels might have influenced their perceptions of their partner's behavior in conflict conversations. These findings supported the S/P theory's assertion that high T associates with competition and low T associates with nurturance (van

Anders et al., 2012). Women's higher T might have predisposed them to perceive their partner's

behavior as nonaccommodative, whereas women's and men's lower T might have helped them

perceive their partner's behavior as more accommodative during the conflict conversation.

Although both women's and men's T levels associated with their perceptions of partner

nonaccommodation, only women's T levels associated with perceived partner accommodation. It

is possible that due to women's proclivity to nurture and maintain long-term relationships (Eagly

& Wood, 1997), women's T may have been more responsive to their partner's nurturing or

accommodative behaviors as compared to men. Moreover, the finding that T negatively

associates with perceptions of accommodation and positively associated with perceptions of

nonaccommodation aligns with work suggesting that T is an antisocial hormone. More

specifically, such research suggests that T predisposes individuals to perceive greater threats to

their social status, reduces interpersonal trust and empathy, and increases hostility, thus making

T incompatible with maintaining nurturant relationships (Bos et al., 2010; Schnedierman, Kanat-

Maymon, & Zagoory-Sharon, 2014).

Baseline T as a Moderator of the Association Between Perceived Partner

Nonaccommodation and Self Uncertainty

The models included both men's and women's perceptions of partner behaviors

according to the tenets of APIM. When exploring dyadic data using APIM, both partners'

variables must be measured using the same scale, which is why the models focus on men's

perceptions of women's behaviors during conflict conversations and women's perceptions of

men's behaviors during conflict conversations (Kenny et al., 2006). The results revealed that

women's perceptions of their partner's behavior as accommodative was negatively associated

with men's self uncertainty, and men's perceptions of partner accommodation were negatively

associated with women's self uncertainty. In other words, women reported less self uncertainty when men perceived them to be more accommodative during the conflict conversation. Similarly, men reported less self uncertainty when women perceived them to be more accommodative during the conflict conversation. It is possible that individuals who engaged in accommodative behaviors during conflict conversations felt more certain about their involvement in the relationship. Accommodation is associated with perceived connection between the partners (Aguilar et al., 2016). Thus, when romantic partners enact greater accommodation during conflict, they may feel more connected with their partner, and therefore, report lower uncertainty about their involvement in the relationship.

Further, women's perceived partner nonaccommodation positively associated with both men's and women's self uncertainty. The more women perceived their partner's behavior as nonaccommodative during the conflict conversation, the more men and women reported being uncertain about their own involvement in the relationship. Research finds that nonaccommodation associates with disaffiliation and greater psychological distance (Gasiorek & Giles, 2012; Speer et al., 2013). In line with this, women who perceived greater nonaccommodation might have felt more disaffiliated from their partner and the relationship, and thus, reported more uncertainty about their involvement in the relationship. Such feelings of disaffiliation or self doubts might have been reflected in women's responses during conflict, which may have resulted in men feeling more distant and thus, reporting greater uncertainty about their involvement in the relationship. These results are in line with the previous work that identified the causal effect of negative emotions on relational uncertainty (Knobloch & Theiss, 2010). Specifically, Knobloch and Theiss (2010) found that one partner's negative emotions subsequently predicted relational uncertainty of the other partner in the following week,

suggesting that negative emotions or behaviors of one partner in a specific episode of conflict conversation may have negative implications for both the partners and the relationship.

Additionally, both men's and women's T levels moderated the associations between perceived partner non(accommodation) and self uncertainty. First, women's T levels moderated the effects of perceived partner (non)accommodation on men's self uncertainty and men's T levels moderated the effect of perceived partner accommodation on women's self uncertainty. The higher women's T levels, the stronger the negative association between men's perceived partner accommodation and men's self uncertainty, the weaker the negative association between women's perceived partner accommodation and men's self uncertainty, and the weaker the positive association between men's perceived partner nonaccommodation and men's self uncertainty. When women had higher T levels, the more men perceived partner accommodation or nonaccommodation during the conflict conversation, the lower men reported self uncertainty. However, for women with higher T levels, the more *women* perceived partner accommodation during conflict, the more men reported self uncertainty after conflict. In sum, women's T levels have differing effect for the associations between men's/ women's (non)accommodation and men's self uncertainty.

Next, the higher men's T levels, the stronger the negative association between men's perceived partner accommodation and women's self uncertainty, and the weaker the negative association between women's perceived partner accommodation and women's self uncertainty. Similar to the women's T findings, when men had higher T levels, the more men perceived partner accommodation during the conflict conversation, the less women reported self uncertainty. For men with higher T levels, the more women perceived partner accommodation during conflict, the more women reported self uncertainty after the conflict. The results indicate

that men's higher T levels might strengthen the partner effect of accommodation on self

uncertainty but impede the actor effect, whereas women's higher T levels might strengthen the

actor effect of (non)accommodation on self uncertainty, but impede the partner effect. Though

speculative, when both men and women have higher T, men's perceptions of partner

accommodation and nonaccommodation may have a beneficial effect on men and women's self

uncertainties. The positive and negative moderation effects of T are in line with previous

findings, which indicate that T is associated with both prosocial *and* antisocial behaviors (Booth,

Johnson, & Granger, 2005; Carré & Archer, 2018; Dreher et al., 2015). For example, Booth et al.

(2005) found that T is associated with marital quality, and Dreher et al. (2014) found that T

promotes prosocial behaviors that are appropriate for increasing status. Another implication is

that the moderation effects of T were unique for actor and partner, suggesting that dyadic

investigations of T can enhance understandings of T's role in interdependent relationships

(Edelstein et al., 2014). Overall, the findings imply that partners of men and women with higher

T scores might need to engage in more accommodative behaviors to dampen the effect of high T

on perceptions of partner accommodation and to mitigate men's and women's self uncertainty.

T, Perceived Partner (Non)Accommodation, and Partner Uncertainty

The findings revealed that women's perceptions of their partner's behavior as

accommodative had a negative association with men's partner uncertainty, and men's

perceptions of partner accommodation had a negative association with women's partner

uncertainty. In other words, women reported lower partner uncertainty when men perceived them

to be more accommodative during the conflict conversation. Similarly, men reported lower

partner uncertainty when women perceived them to be more accommodative during the conflict

conversation. Research finds that accommodation is associated with positive partner appraisals

(Giles & Soliz, 2015). Thus, romantic partners enacting greater accommodation during conflict may feel more connected with their partner and perceive them more positively, and therefore feel more certain about their partner's involvement in the relationship. In line with high T's association with competitive behaviors (van Ander et al., 2012), women's T associated with men's partner uncertainty, such that the higher women's T levels, the more uncertainty men reported about their partner's involvement in the relationship.

Men's and women's perceived partner nonaccommodation positively associated with women's partner uncertainty. The more men and women perceived their partner's behavior as nonaccommodative during the conflict conversation, the more women reported being uncertain about their partner's involvement in the relationship. As stated earlier, individuals who perceived greater nonaccommodation might have felt more distanced from their partner, and thus, reported more uncertainty about their partner's involvement in the relationship. In line with previous work (Dhillon et al., 2017; Speer et al., 2013), nonaccommodation associated with negative relational outcomes for both men and women. These findings add to a growing body of literature suggesting that nonaccommodation, especially during conflict conversations (e.g., Dhillon et al., 2017), can be detrimental to relationships.

Additionally, the moderation effects of T on partner uncertainty were quite similar to those for self uncertainty. Men's T moderated the negative association between men's and women's perceptions of partner accommodation and men's partner uncertainty. The higher men's T levels, the stronger the negative association between men's and women's perceived partner accommodation and men's partner uncertainty. When men had higher T levels, the more men and women perceived partner accommodation during the conflict conversation, the less men reported being uncertain about their partner's involvement in the relationship. Men's T also

moderated the association between men's perceptions of partner nonaccommodaton and

women's partner uncertainty, such that when men had higher T levels, the more they perceived

their partner's behavior as nonaccommodative during the conflict conversation, the less women

reported being uncertain about their partner. The results reveal that men's T might enhance the

effect of accommodation on men's partner uncertainty and impede the effect of

nonaccommodation on women's partner uncertainty.

Next, women's T levels moderated the negative association between men's perceptions

of partner accommodation and men's partner uncertainty. Also, women's T moderated the

association between women's perceptions of partner accommodation and men's perceived

partner uncertainty. When women had higher T levels, the more men and women perceived their

partner's behavior to be accommodative during the conflict conversations, the lower men's and

the higher women's partner uncertainty. Such findings indicate that men's and women's T levels

had contrasting moderation effects on the association between perceptions of partner

accommodation and partner uncertainty. Contrasting findings for men's and women's T are in

line with the assertion that investigating sex differences may enable better understanding of T's

role in partner uncertainty (Carre & Olmstead, 2015). It is found men's T strengthened, whereas

women's T weakened, the effect of women's perceptions of partner accommodation on men's

partner uncertainty. Similarly, men's T weakened, whereas women's T might have strengthened,

the effect of men's perceptions of partner accommodation on men's partner uncertainty. A

partner's higher T might be beneficial in reducing individuals' partner uncertainty; however,

individuals' higher T might increase their feelings of partner uncertainty. It is possible that

individuals' with higher T levels may experience greater doubts about their partner's

involvement and therefore, feel less committed to the partner. Indeed, research finds that

individuals' with higher T levels have more sexual partners and are less likely to be in committed

relationships (van Anders, Hamilton, & Watson, 2007; van Anders& Watson, 2007). Individuals

with higher T should be more mindful when appraising their partner's involvement in the

relationship after a conflict conversation. Additionally partners of such individuals may need to

engage in less nonaccommodative or more accommodative behaviors so that the effect of their T

levels can be mitigated.

T, Perceived Partner (Non)Accommodation, and Relationship Uncertainty

The study found that men's perceptions of partner accommodation negatively associated

with women's relationship uncertainty, and women's perceptions of partner accommodation

negatively associated with men's relationship uncertainty. Although the study supports previous

findings suggesting that positive communication such as relationship talk reduces relational

uncertainty (Knobloch & Theiss , 2010; 2011a), but the partner effects revealed in the present

study were in contrast to the previous findings, which only found actor effects (Knobloch &

Theiss, 2011a). Nevertheless, the study findings highlight the importance of investigating the

interdependent nature of romantic relationships, as individuals' perceptions of partner behaviors

in conflict conversations associated with one's relationship uncertainty. It is possible that

individuals' enactment of less accommodation or greater nonaccommodation during conflict

conversations makes them feel disaffiliated from their partner or the relationship (Soliz & Giles,

2014), increasing their doubts about the status or future of the relationship.

The results revealed that women's T levels moderated the association between men's

perceived partner accommodation and men's relationship uncertainty, as well as the association

between men's perceived partner nonaccommodation and men's relationship uncertainty. When

women had higher T levels, the more men perceived their partner's behavior to be

accommodative and the lesser men perceived their partner's behavior to be nonaccommodative during the conflict conversations, the lower men's relationship uncertainty. However, women's T moderated the association between women's perceptions of partner accommodation and men's relationship uncertainty, and the association between women's perceived partner nonaccommodation and men's relationship uncertainty, in the opposite way. When women had higher T levels, the more women perceived their partner's behavior to be accommodative and the lesser women perceived their partner's behavior to be nonaccommodative during the conflict conversations, the higher men's relationship uncertainty. These findings indicate that women's higher T levels were beneficial for the association between men's perceptions of partner behavior and their relationship uncertainty, but were harmful for the association between women's perceptions of partner behavior and men's relationship uncertainty. Although speculative, it might be inferred that women's higher T might have enhanced the effect of men's perceived partner (non)accommodation and impeded the effect of women's perceived partner (non)accommodation on men's relationship uncertainty. Consequently, for women with higher T, men may need to engage in greater amounts of accommodation and lesser nonaccommodation to dampen the effect of women's T on the association between women's perceived partner (non)accommodation and men's relationship uncertainty.

Overall, the findings indicate that individuals' higher T levels have differing effect on the association between individuals' perceptions of partner behaviors and relational uncertainty. These findings suggest that partners of individuals with higher T may need to engage in more accommodative and less nonaccommodative behaviors to reduce their own or their partner's relational uncertainty. These results support recent investigations indicating that T associates with both antisocial *and* prosocial behaviors and outcomes (Dreher et al., 2016). In fact, the

findings suggest that high T may be beneficial in some circumstances. However, given previous

research indicating that high uncertainty leads to less relationship talk, which further increases

uncertainty (Knobloch & Theiss, 2011a), the findings of the current study may suggest that if the

negative effect of T on the associations between perceived partner (non)accommodation and

relational uncertainty continues, it can deteriorate the relationship at a much faster pace.

Perceived Partner (Non)Accommodation and Changes in Testosterone

Guided by the tenets of S/P theory (van Anders et al., 2012), the study postulated that

individuals' T levels would change from pre to post conversation in response to their perceptions

of their partner's behavior during the conflict. However, the results did not reveal significant

associations between perceptions of partner accommodation and T levels post conflict or changes

in T from pre to post conflict. Although the current study did not find that perceiving a partner's

conflict behaviors as accommodative or nonaccommodative affects T levels post conflict, this

does not mean that the assertions of S/P theory are not supported. It is possible that T levels may

take more time to respond to partners' conflict behaviors, rather than immediately after the

conversation, as was tested in the current study. For example, Mehta and Josephs (2010) found

that winners' experienced changes in T 15 minutes post competition. In future research, it may

be worthwhile to continue exploring how T responds to romantic partners' perceptions of their

partner's behavior during conflict conversations by measuring T at multiple time points after the

conflict conversation to better assess the trajectory of physiological responses. Another possible

explanation for non-significant findings could be that T changes may be more relevant in

situations that involve more nonaccommodative behaviors than accommodative behaviors. Given

that individuals perceived more accommodation than nonaccommodation during the conflict

conversations (as evidenced by the means), it is possible that T changes were not reflective of the perceptions of conflict behaviors.

To summarize the findings, higher T levels for men and women may increase their propensity to perceive more negative behaviors and less positive behaviors of their partner during conflict conversations. Additionally, individuals that perceive more partner accommodation during conflict may feel more confident about their involvement in the relationship (i.e., low self uncertainty), whereas those that perceive more partner nonaccommodation may feel more skeptical about their involvement in the relationship. However, the interaction effects of T reveal that higher T levels may be beneficial for an individual assessing their involvement in the relationship, but it may be harmful for partner's assessments of their involvement in the relationship. In other words, high T might improve one's confidence about their involvement in the relationship, however, it may make the partner question their involvement. Further, men's higher T had negative implications for men's appraisals of partner involvement, whereas it had positive implications for women's assessments of partner uncertainty. Although men's higher T might make women more confident about their partner's commitment to the relationship, it may make men more skeptical about their partner's involvement. Finally, women's higher T may make men more doubtful about the status of their relationship in response to their perceptions of partner (non)accommodative behaviors. Though the present study only tested associations among T, (non)accommodation, and uncertainty, it is possible that T levels influence perceptions of relational quality, as noted throughout this summary.

Overall, the findings indicated that T moderated the effects of perceived partner accommodation and nonaccommodation on relational uncertainty. The moderation effects

differentially influenced the actor and partner effects of perceived partner accommodation and

perceived partner nonaccommodation on the three dimensions of uncertainty, and as such, future

work should seek to replicate the findings by designing a longitudinal or experimental study to

identify the causality of the revealed associations.

Relational Uncertainty as a Mediator of the Association Between Perceived Partner

Accommodation and Relationship Satisfaction

All three dimensions of relational uncertainty mediated the associations between

perceptions of partner accommodation and nonaccommodation and relationship satisfaction.

Relational uncertainty negatively associated with both men's and women's relationship

satisfaction. The association between men's perceptions of partner (non)accommodation and

relationship satisfaction were mediated by women's relational uncertainty, whereas the

association between women's perceptions of partner (non)accommodation and relationship

satisfaction were mediated by men's relational uncertainty. The more individuals perceived their

partner's behavior as accommodative during conflict, the less their partner's reported

experiencing relational uncertainty, and the more individuals and their partner reported being

relationally satisfied. Conversely, the more individuals perceived their partner's behavior as

nonaccommodative during conflict, the more their partner reported experiencing relational

uncertainty, and the less individuals and their partner reported being relationally satisfied. These

findings emphasize the interdependent nature of romantic partners' interactions by revealing that

relational uncertainty of one partner post conflict can associate with the relationship satisfaction

of the other. Considering previous work, which finds that individuals grappling with relational

uncertainty tend to avoid more and enact less relationship talk (Knobloch & Theiss, 2011a), the

findings may suggest that a partner's high uncertainty can elicit a negative climate in the relationship, thus reducing their partner's relationship satisfaction.

To summarize, the findings of the current study provide further evidence that individuals' perceptions are important when considering the influence of conflict communication on their own and their partner's relational outcomes (Dhillon et al., 2017). Additionally, T plays a prominent role in perceiving partner's accommodation and nonaccommodation behaviors during conflict conversations, which in turn predict individuals' own and their partner's feelings about the relationship. As briefed above, individuals with higher T levels must be cautious when appraising relational uncertainty because the effect of their perceived partner (non)accommodation can be more detrimental for their relational uncertainty. Given the partner effect of relational uncertainty on relationship satisfaction, it is possible that the negative perceptions of partner's behavior during conflict conversations may serve to increase relational uncertainty and further deteriorate the relationship. It may be beneficial for relational partners to enact more accommodation and limit engaging in nonaccommodation in order to promote a positive relational climate during conflict conversations that fosters relationship satisfaction for both partners (Guerrero et al., 2017).

A recently established framework, the theory of resilience and relational load (TRRL, Afifi, Merrill, & Davis, 2016) suggests that relational partners accumulate emotional reserves or emotional capital when they validate their partner on a daily basis and these emotional reserves help partners safeguard their relationship during stressful situations. More specifically, the theory asserts that the partners' enact greater maintenance behaviors on a daily basis to build positive emotional reserves, which promotes positive "communication patterns that uplift their partner and preserve the relationship" during stressful situations (pp. 665). Some examples of the

maintenance behaviors could include nonverbal affectionate behaviors (e.g., kissing, hugging),

verbal behaviors (e.g., saying "I love you", "thank you"), and actions (e.g., going on dinner

dates, taking walks together, doing something for one's partner) (Afifi et al., 2016). Given the

assertions of the theory of resilience and relational load (TRRL), it may be worthwhile for

individuals with higher T levels to continue engaging in maintenance behaviors and

accommodation in their everyday conversations to buffer the negative effects of T during

conflict conversations (TRRL, Afifi, Merrill, & Davis, 2016). In every day conversations, high T

individuals need to pay more attention to their perceptions of their partner's behaviors and how

those perceptions affect their doubts about self involvement, partner involvement, and the

relationship.

Gender Salience and Perceived Partner (Non)Accommodation

Post-hoc analyses revealed that women's gender salience positively associated with their

perceptions of partner nonaccommodation, suggesting that the more women felt that their gender

was salient during the conflict conversations, the greater they perceived their partner's behavior

to be nonaccommodative during the conflict conversation. In other words, the more women self-

defined themselves according to a "woman prototype," the more they perceived men to be

nonaccommodative during the conflict. Stereotypically, a protoptypical woman is kind,

nurturing, relationally sensitive, warm, and sensitive, and a prototypical man is assertive,

competitive, task-oriented, and competent (Deaux & Lewis, 1984). It is possible that when

women affiliate more with their gender prototype in a conversation, they feel that their male

partner is also adhering to gender norms and view him as an out-group member, which may

increase perceptions of male's nonaccommodation during conflict. As proposed by the sex-

stereotype hypothesis, women rely on more positive and cooperative conflict behaviors (e.g.,

compromising and engaging), whereas men are supposed to enact negative and competitive

behaviors (e.g., personal criticism and blaming) (Cupach & Canary, 1995; Hojjat, 2000).

Furthermore, the oppression hypothesis postulates that the chronic stigmatization of

certain groups generates adaptations that lead the members of the oppressed groups to exhibit

certain nonverbal skills and behaviors that help them cope with their lower status (LaFrance &

Henley, 1994). More specifically, the hypothesis posits that the members of the chronically

oppressed groups are more sensitive and attentive to their social environment, which makes them

better at decoding others' nonverbal behaviors and they also tend to be more guarded and

vigilant (Frable, Blackstone, & Sherbaum, 1990). Historically, men are considered to be part of

the dominant group and women are part of an oppressed group (Jónasdóttir, 1991). Hence, it is

possible that women have adapted to be more vigilant, attentive, and sensitive to men's

nonverbal-nonaccommodative behaviors. Thus, women who feel their gender is prominent

during the conflict conversations may expect their male partners to engage in more competitive

and negative behaviors, and therefore perceive more nonaccommodative behavior.

It is important to note that gender salience did not associate significantly with men's

perceptions of their partner's behavior during conflict. It is possible that men may be more

focused on the couple identity, rather than their individual gender identity. This is in line with

previous research, which finds that contrary to the sex-stereotype hypothesis, men engage in

more engaging and cooperative behaviors during conflict (Cupach & Canary, 1995; Hojjat,

2000). During conflict, men may take a more positive approach and be more focused on conflict

resolution, rather than thinking about their gender.

Theoretical and Practical Implications

This study contributes to a growing literature that links physiological markers to romantic partners' communication. The present study sought to explore the role of testosterone (T) in romantic partners' communication during conflict conversations. Guided by the tenets of communication accommodation theory and the steroid/peptide theory of social bonds, the present investigation tested moderated mediation hypotheses predicting that individuals' T levels would moderate the association between perceptions of partner (non)accommodation and relational uncertainty, and that relational uncertainty would mediate the associations between perceptions of partners (non)accommodation and relationship satisfaction. The results revealed interesting patterns indicating that men's and women's testosterone scores differentially moderated the effect of perceptions of partner (non)accommodation on relational uncertainty. Individuals' higher T weakened the association between their partner's perceptions of partner behaviors and relational uncertainty, but strengthened the association between their own perceptions of partner's behavior and relational uncertainty. This study provides evidence that T may have both antisocial and prosocial effects on relational partners' appraisals of the relationship. Additionally, the findings revealed that individuals' relational uncertainty mediates the association between partner's perceptions of partner (non)accommodation and relationship satisfaction. The study also found support for the moderating role of T and the mediating role of relational uncertainty.

The study findings support the tenets of communication accommodation theory as the theory asserts that the recipients of accommodation appraise their partner and the conversation more positively, and that recipients' perceptions of accommodation associate with an array of positive relational outcomes, such as closeness, satisfaction, and liking (Giles & Soliz, 2015;

Soliz & Giles, 2014). On the contrary, the recipients of nonaccommodation appraise their partner and the conversation more negatively and report disliking, disaffiliation, and greater psychological distance (Giles & Soliz, 2015; Soliz & Giles, 2014). Supporting the assertions of CAT, the study revealed that the accommodation associates with positive relational outcomes, such that the individual's perceptions of partner accommodation associated with their partner's lower relational uncertainty and higher relationship satisfaction, and nonaccommodation associates with negative relational outcomes, such that the individual's perceptions of partner nonaccommodation associated with higher relational uncertainty and lower relationship satisfaction.

Further, the results support the steroid/ peptide theory, which posits that high T associates with competition and competing behaviors that help them acquire or maintain resources, and low T associates with nurturance and nurturing behaviors that involve comforting or maintaining pair bonds (van Ander et al., 2012). The findings revealed that higher T associated with competing or nonaccommodative behaviors for men and women, and lower T associated with accommodative behaviors for women. Some of the moderating effects of T revealed that it might weaken the positive effect of partner accommodation on relational uncertainty, and accentuate the negative effect of nonaccommodation on relational uncertainty, thus supporting the assertions of steroid/ peptide theory.

The study underscores the utility of combining physiology and communication theories to better understand the links between romantic partners' biology and their communication during conflict conversations. The findings not only imply that physiology plays an integral role in romantic partners' relationships, but may also help provide practical advice for relationship nurturance. It is imperative for individuals to keep their romantic relationships in existence and

prevent them from deteriorating. Related, previous work finds that maintaining romantic relationships is key to the mental and physical health of individuals (Braithwaite, Delevi, & Fincham, 2010). More specifically, individuals in committed romantic relationships experience fewer mental health problems, are less likely to be overweight, engage in less risky behaviors, and have less problematic outcomes (Braithwaite et al., 2010). Having a good romantic relationship is associated with an array of mental and physical health benefits. Because unsatisfying dating relationships will likely dissolve, and being in a committed relationship is linked with well-being (Arriaga, 2001; Braithwaite et al., 2010), it is necessary for romantic partners to expend time and effort to maintain their relationships.

As described earlier, it may be important for couples in which both or one of the partners have higher than average T levels to be aware of their potential propensity for perceiving anti-social behavior during conflict conversations, and such couples may want to discuss the importance of being mindful and accepting during conflict conversations. Such couples may have to engage in more accommodation and less nonaccommodation during their everyday conversations. Couples in which one or both partners have high T levels may benefit from enacting more relational maintenance behaviors on a daily basis to help build emotional reserves to buffer during stressful times (Afifi, Merrill, & Davis, 2016). Counselors can ask romantic partners to communicate verbal and nonverbal affection to each other (e.g., kissing, hugging, saying "I love you" or "You mean a lot to me"), increase the amount of quality time they spend with each other or do something nice for the partner. These ongoing maintenance acts would help couples build resilience that would help them cope stressors posed by the conflict conversations (Afifi et al., 2016).

Conflict management is one of the relational maintenance strategies that help romantic partners maintain their relationship, which can further have positive implications for their well-being (Stafford et al., 2000). Accommodative behavior during conflict is linked to greater conversation satisfaction (Dhillon et al., 2017), and hence, there may be a greater likelihood of conflict resolution. Enacting positively oriented behaviors, such as accommodation, during conflict can possibly help reduce negative relational outcomes and further improve relational quality. A recent investigation reports that for romantic partners, with every one-unit increase in relational quality, the likelihood of relationship dissolution reduces by 61% (Balsam, Rothblum, & Wickham, 2017). Couples must constantly work to improve the relationship quality to prevent relationship deterioration.

As revealed by the findings, high T may reduce the relational quality of romantic partners. Additionally, higher T levels predict divorce in marriages and individuals in committed relationships have lower T levels, which can have positive implications for couples' conflict communication (Mazur & Michalek, 1998). Given these links, therapists may advice romantic partners to enact and focus more accommodative behaviors during conflict. Further, therapists can advise romantic partners with higher levels of T to be more mindful when assessing their relational quality, as well as openly discuss what they perceive as accommodation or nonaccommodation at the onset of the relationship, in order to mitigate the effects of higher T on the relationship. Overall, the study's findings provided support for the tenets of steroid/ peptide theory in addition to extending the utility of communication accommodation theory in examining the influence of partners' communicative behaviors in romantic relationships.

Limitations and Future Directions

Even though this study makes an important contribution to our understanding of T's role in perceptions of romantic partners' accommodative and nonaccommodative behaviors during conflict conversations and the effect of such behaviors on relationship indicators, there are a few important limitations that should be addressed. First, T is not the only hormone that is relevant in the romantic partners' conflict conversations. Oxytocin is considered a pair bonding hormone that inclines individuals to engage in relational maintenance behaviors that reinforce relationship commitment and fondness (van Anders et al., 2012). For example, Denes, Dhillon, and Speer (2017) suggest that romantic partners engage in greater maintenance strategies post orgasm as a function of surges in oxytocin. Additionally, scholars suggest that the role of T may be better understood by examining its interaction with other hormones, such as cortisol, rather than its direct effects (Floyd, 2014; Mehta & Josephs). For instance, a recent study found that cortisol moderated the effect of T on aggression and dominance (Mehta & Josephs, 2010; Popma et al., 2007). Specifically, the research reveals that T positively associates with dominance when cortisol is low, but this association is reversed when cortisol is high. It is thus possible that hormones such as oxytocin and cortisol may interact with T to influence romantic partners' perceptions of accommodation. Given that oxytocin is a pair bonding hormone (van Anders et al., 2011), it is possible that higher levels of oxytocin may suppress the anti-social effect of T on the association between perceptions of partner (non)accommodation and relational uncertainty. Also, cortisol may reverse the effect of T or may explain the prosocial findings associated with T revealed by the study. It would be worthwhile for future research to examine the interaction of multiple hormones in predicting communication during romantic partners' conflict conversations and its outcomes.

Next, the study recruited an undergraduate sample with an average age of 20 years and an average relationship length of 16 months. Individuals in long-term, committed relationships (e.g., marriage) may handle conflict differently and may have developed unique patterns of managing conflict. Additionally, individuals in long-term relationships may be more aware of their partner's pattern of communication during conflict and/or may have more stressful conflict issues to manage (e.g., Cartensen, Gottman, & Levenson, 1995) which may affect their physiology, perceptions of conflict behaviors, and relational uncertainty. Moreover, T levels decrease over the life span (see Nelson, 2011), thus the associations among T, perceived non(accommodation), and relational outcomes may depend on an individual's age. Furthermore, the sample consisted of heterosexual, majority intra-racial couples and thus, the findings cannot be generalized to same-sex or interracial couples who may have unique physiological and conflict patterns. The study revealed different actor and partner associations among physiology, perceptions of partner behaviors, and relational variables for men and women, and these links may be different in relationships consisting of same-sex partners and hence, the findings cannot be extended to same-sex couples. Men have higher T levels and report receiving and exhibiting more acts of aggression compared to women (Harris, 1992; Rowe et al., 2004). Thus, it is possible that gay male couples might perceive more nonaccommodative behavior than accommodative behavior during conflict conversations, and their higher T may polarize these perceptions even further, thus affecting relational uncertainty and relationship satisfaction. It is possible that for couples consisting of two higher T male partners, enacting accommodation during conflict is not as strongly associated with their relational uncertainty, as compared to couples consisting of two higher T female partners.

Similarly, interracial couples might face unique stressors and challenges, such as issues related to the merging or maintenance of racial identities, which may cause additional conflicts in interracial romantic relationships (Foeman & Nance, 2010). Considering that African Americans and Asians have greater concentrations of T compared to Whites, it is possible that race might interact with T levels to influence perceptions of conflict behaviors (Aloia et al., 1998; Gapstur et al., 2002; Harris, 1992). Although speculative, it is possible that non-white individuals' may perceive greater nonaccommodation during conflict due to their higher T levels, which may further polarize these perceptions, resulting in more relational uncertainty post conflict conversations. Thus, future research would benefit from recruiting a more diverse sample in terms of age, race/ethnicity, sexuality, and relationship duration.

Another limitation involves the design and procedures of the study. First, to assess T responses to conflict behaviors, T levels were only assessed once immediately after the conversation. It is possible that if T levels were measured at multiple time points after the conflict conversation, fluctuations in T would have associated with perceptions of partners' behaviors during the conflict conversation (Mehta & Josephs, 2010). In future work, researchers would benefit from measuring T at different time points before and after the conflict conversations.

The study focused on the perceptions of romantic partners' communication behavior rather than the perceptions of one's own behavior during the conflict conversations. As noted earlier, conversations among romantic partners are interdependent; nonetheless, it may be worthwhile for future research to assess both self and partner perceptions of communication behaviors during conflict conversations. Furthermore, T levels may associate differently with perceptions of one's own behavior. For example, T levels may moderate the associations

between individuals' perceived enactment of their own (non)accommodative behavior and relational uncertainty. It would also be beneficial for future research to explore different motivations for partners' communicative adjustments to accommodate or nonaccommodate during conflict conversations. For example, partners' intentions or inferred motive to accommodate or nonaccommodate, partner facilitation, and partner interference may predict perceptions of partner (non)accommodation during conflict conversations, and subsequently predict relational uncertainty (Gasiorek & Giles, 2012; Knobloch & Solomon, 2004). Previous work finds that when negative motives are inferred, nonaccommodation is reciprocated with greater nonaccommodation (Gasiorek & Giles, 2012). Similarly, inferred motives may moderate the association between perceived partner nonaccommodation and relational uncertainty, such that when inferred to negative motives, perceptions of partner nonaccommodation may have stronger associations with relational uncertainty. Additionally, relational turbulence theory asserts that partner facilitation and interference lead to relational uncertainty (Solomon, 2016). It is thus possible that perceptions of partner (non)accommodation may mediate the associations between partner facilitation or interference and relational uncertainty.

An additional limitation of the study is that it does not explore changes in relational uncertainty and relationship satisfaction from pre to post conflict because the current study only focused on how uncertain and satisfied individuals' feel post conflict conversations. It is possible that perceptions of partner accommodation and nonaccommodation during conflict conversations might predict changes in relational uncertainty and relationship satisfaction. It may not be meaningful to explore the changes immediately before and after the conflict conversations; however, consistent enactment of accommodation and nonaccommodation during conflict conversations over a longer period of time may reveal meaningful associations. As such,

research finds that the magnitude of increase in relational uncertainty over time predicts relationship satisfaction (Theiss, Estlein, & Weber, 2012). Thus, future research would benefit from exploring whether perceptions of partner behavior during conflict conversations over time change how individuals appraise relational uncertainty and relationship satisfaction, as well as whether perceptions of partner behaviors, as moderated by T, increase or decrease relational uncertainty and relationship satisfaction.

As revealed by the post-hoc analyses, women's gender salience may play an important role in perceiving partners' behavior during conflict As explained above, it is possible that women's perception of whether their partner's gender is salient during the conflict conversation might explain their perceptions of their partner's behavior, which may further associate with relational variables. Further, one's gender and gender salience may interact with perceptions of partner behavior during conflict to associate with relational variables. Given that partners' may perceive other as an outgroup member during conflict conversations, it may be worthwhile for future studies to explore the effect of one's gender and perceived gender salience of partner when assessing perceptions of partner (non)accomodation during conflict conversations.

A final future direction may involve designing interventions by combining the tenets of the TRRL and CAT to help romantic partners reverse the negative implications of T during conflict conversations (Afifi et al., 2016; Giles & Soliz, 2015). The TRRL supports the possibility that relational partners can benefit from enacting relational maintenance behaviors on a daily basis to build emotional reserves that may help partners' buffer stress during conflict conversations. Considering this possibility, partners with higher T levels may benefit from enacting a greater amount of relational maintenance behaviors (e.g. saying "I love you", hugging, spending quality time together without technology) on a daily basis, which might help

them dampen the negative effect of T on relational uncertainty, further preventing the deterioration of the relationship.

Conclusion

In conclusion, the study contributes to the literature by combining the tenets of CAT and steroid/peptide theory of social bonds to examine romantic partners conflict conversations. The study proposed moderated mediation hypotheses predicting that individuals' T levels would moderate the association between perceptions of partner (non)accommodation and relational uncertainty, and that relational uncertainty would mediate the associations between perceptions of partners (non)accommodation and relationship satisfaction. In addition, the study hypothesized that T levels would fluctuate in response to romantic partners perceptions of partner (non)accommodation during the conflict conversations. Although the study did not find that the T levels respond to perceptions of partner's communicative behavior, but it did find support for most of the moderated mediation hypotheses, revealing T as a moderator and relational uncertainty as a mediator. Additionally, the study finds that T may have both antisocial and prosocial effects on relational partners' appraisals of the relationship.

Further, the study findings support the tenets of communication accommodation theory and steroid/ peptide theory of social bonds, and reveal the utility of combining by physiology and communication theories to better understand the links between romantic partners' biology and their communication during conflict conversations. The study provides evidence that the physiology plays an integral role in romantic partners' relationships and outlines practical advice for relationship nurturance.

References

Afifi, T., Afifi, W., Merrill, A. F., Denes, A., & Davis, S. (2013). "You need to stop talking about this!": Verbal rumination and the costs of social support. *Human Communication Research*, *39*(4), 395-421. doi: 10.1111/hcre.12012

Afifi, T. D., Granger, D., Denes, A., Joseph, A., & Aldeis, M.D. (2011). Parents' communication skills and adolescents' salivary α-amylase and cortisol response patterns. *Communication Monographs, 78*(3)*,* 273-295. doi: 10.1080/03637751.2011.589460

Afifi, T.D., Merrill, A.F., & Davis, S. (2016). The theory of resilience and relational load. *Personal Relationships*, *23*(4), 663-683. doi: 10.1111/pere.12159

Aguilar, L., Downey, G., Krauss, R., Pardo, J., Lane, S., & Bolger, N. (2015). A dyadic perspective on speech accommodation and social connection: Both partners' rejection sensitivity matters. *Journal of Personality*. *84*(2), 165-177. doi: 10.1111/jopy.12149

Aloia, J. F., Mikhail, M., Pagan, C. D., Arunachalam, A., Yeh, J. K., & Flaster, E. (1998). Biochemical and hormonal variables in black and white women matched for age and weight. *Journal of Laboratory and Clinical Medicine*, *132*(5), 383-389. Doi:10.1016/S0022-2143(98)90109-3

Aloia, L. S., & Solomon, D. H. (2015). Conflict intensity, family history, and physiological stress reactions to conflict within romantic relationships. *Human Communication Research*, *41*(3), 367-389. doi: 10.1111/hcre.12049

Archer, J. (1991). The influence of testosterone on human aggression. *British journal of psychology*, *82*(1), 1-28.

Archer, J. (2006). Testosterone and human aggression: an evaluation of the challenge hypothesis. *Neuroscience & Biobehavioral Reviews*, *30*(3), 319-345. doi:10.1016/j.neubiorev.2004.12.007

Archer, J., Graham-Kevan, N., & Davies, M. (2005). Testosterone and aggression: A reanalysis of Book, Starzyk, and Quinsey's (2001) study. *Aggression and Violent Behavior*, *10*(2), 241-261.

Arriaga, X. B. (2001). The ups and downs of dating: Fluctuations in satisfaction in newly formed romantic relationships. *Journal of personality and social psychology*, *80*(5), 754-765.

Balsam, K. F., Rothblum, E. D., & Wickham, R. E. (2017). Longitudinal predictors of relationship dissolution among same-sex and heterosexual couples. *Couple and Family Psychology: Research and Practice*, *6*(4), 247.

Baron-Cohen, S. (2002). The extreme male brain theory of autism. *Trends in cognitive sciences*, *6*(6), 248-254.

Bayard, D. T. (1995). *Kiwitalk: sociolinguistics and New Zealand society*. Dunmore Press Limited.

Book, A. S., Starzyk, K. B., & Quinsey, V. L. (2001). The relationship between testosterone and aggression: A meta-analysis. *Aggression and Violent Behavior*, *6*(6), 579-599.

Booth, A., & Dabbs, J. M. (1993). Testosterone and men's marriages. *Social Forces*, *72*(2), 463-477.

Booth, A., Johnson, D. R., & Granger, D. A. (2005). Testosterone, marital quality, and role overload. *Journal of Marriage and Family*, *67*(2), 483-498.

Bos, P. A., Terburg, D., & van Honk, J. (2010). Testosterone decreases trust in socially naive

    humans. *Proceedings of the National Academy of Sciences*, *107*(22), 9991-9995.

    doi:10.1073/pnas.0911700107

Braithwaite, S. R., Delevi, R., & Fincham, F. D. (2010). Romantic relationships and the physical

    and mental health of college students. *Personal Relationships*, *17*(1), 1-12.

Canary, D. J., Cunningham, E. M., & Cody, M. J. (1988). Goal types, gender, and locus of

    control in managing interpersonal conflict. *Communication Research*, *15*(4), 426-446.

    doi: 10.1177/009365088015004005

Canary, D. J., & Cupach, W. R. (1988). Relational and episodic characteristics associated with

    conflict tactics. *Journal of Social and Personal Relationships*, *5*(3), 305-325.

Canary, D. J., Cupach, W. R., & Serpe, R. T. (2001). A competence-based approach to

    examining interpersonal conflict test of a longitudinal model. *Communication Research*,

    28(1), 79-104.

Canary, D. J., & Spitzberg, B. H. (1989). A model of the perceived competence of conflict

    strategies. *Human Communication Research*, *15*(4), 630-649. doi: 10.1111/j.1468-

    2958.1989.tb00202.x

Canary, D. J., & Spitzberg, B. H. (1990). Attribution biases and associations between conflict

    strategies and competence outcomes. *Communications Monographs*, *57*(2), 139-151.

Carré, J. M., Geniole, S. N., Ortiz, T. L., Bird, B. M., Videto, A., & Bonin, P. L. (2017).

    Exogenous testosterone rapidly increases aggressive behavior in dominant and impulsive

    men. *Biological psychiatry*, *82*(4), 249-256.

Carré, J. M., McCormick, C. M., & Hariri, A. R. (2011). The social neuroendocrinology of

    human aggression. *Psychoneuroendocrinology*, *36*(7), 935-944. DOI:

    10.1016/J.PSYNEUEN. 2011.02.001

Carré, J. M., & Olmstead, N. A. (2015). Social neuroendocrinology of human aggression:

    examining the role of competition-induced testosterone dynamics. *Neuroscience*, *286*,

    171-186. http://dx.doi.org/10.1016/j.neuroscience.2014.11.029

Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term

    marriage. *Psychology and aging*, *10*(1), 140.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation

    analysis for the behavioral sciences* (3rd ed.). New York, NY: Routledge.

Cupach, W. R. (1982). *Communication satisfaction and interpersonal solidarity as outcomes of

    conflict message strategy use.* Paper presented at the Annual Meeting of the Speech

    Communication Association, Boston, MA.

Cupach, W. R., & Canary, D. J. (1995). Managing Conflict and Anger: Investigating the Sex

    Stereotype Hypothesis. In P.J. Kalbfeisch & M.J. Cody (Eds.), *Gender, power, and

    communication in human relationships* (pp. 233 – 252). New York, NY: Psychology

    Press

Deaux, K., & Lewis, L. L. (1984). Structure of gender stereotypes: Interrelationships among

    components and gender label. *Journal of personality and Social Psychology*, *46*(5), 991.

Dhillon, A., Denes, A., Crowley, J.P, Ponivas, A., Winkler, K.L., & Bennett, M. (2017,

    November). *Does physiology influence accommodation and satisfaction during conflict?:*

Exploring the role of testosterone in couples' conflict conversations. Paper presented at

the National Communication Association Conference, Dallas, TX.

Ditzen, B., Schaer, M., Gabriel, B., Bodenmann, G., Ehlert, U., & Heinrichs, M. (2009).

Intranasal oxytocin increases positive communication and reduces cortisol levels during

couple conflict. *Biological psychiatry*, *65*(9), 728-731.

Dragojevic, M., Gasiorek, J. & Giles, H. (2016). Communication accommodation theory. In C.R.

Berger & M. E. Roloff (Eds.). *The International Encyclopedia of Interpersonal

Communication*. Retrieved from Wiley Online Library.

doi:10.1002/9781118540190.wbeic0006

Dreher, J. C., Dunne, S., Pazderska, A., Frodl, T., Nolan, J. J., & O'Doherty, J. P. (2016).

Testosterone causes both prosocial and antisocial status-enhancing behaviors in human

males. *Proceedings of the National Academy of Sciences*, *113*(41), 11633-11638. doi:10.

1073/pnas.1608085113/-/DCSupplemental.

Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved

dispositions versus social roles. *American psychologist*, *54*(6), 408. DOI:

10.1017/S0140525X99331812

Edelstein, R. S., van Anders, S. M., Chopik, W. J., Goldey, K. L., & Wardecker, B. M. (2014).

Dyadic associations between testosterone and relationship quality in couples. *Hormones

and Behavior*, *65*(4), 401-407. http://dx.doi.org/10.1016/j.yhbeh.2014.03.003

Edwards, D. A., & Casto, K. V. (2013). Women's intercollegiate athletic competition: cortisol,

testosterone, and the dual-hormone hypothesis as it relates to status among teammates.

Hormones and Behavior, *64*(1), 153-160. http://dx.doi.org/10.1016/j.yhbeh.2013.03.003

Eisenegger, C., Haushofer, J., & Fehr, E. (2011). The role of testosterone in social interaction. *Trends in Cognitive Sciences*, *15*(6), 263-271. doi:10.1016/j.tics.2011.04.008

Eisenegger, C., Naef, M., Snozzi, R., Heinrichs, M., & Fehr, E. (2010). Prejudice and truth about the effect of testosterone on human bargaining behaviour. *Nature*, *463*(7279), 356.

Ellis, P. D. (2010). *The essential guide to effect sizes: Statistical power, meta-analysis, and the interpretation of research results*. New York, NY: Cambridge University Press.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, *39*(2), 175-191. DOI: 10.3758/BF03193146

Floyd, K., & Afifi, T. D. (2011). Biological and physiological perspectives on interpersonal communication. In M. L. Knapp & J. A. Daly (Eds.), *The handbook of interpersonal communication* (4th ed., pp. 87-127). Thousand Oaks, CA: Sage.

Floyd, K., Hesse, C., & Generous, M. A. (2015). Affection exchange theory: A bio-evolutionary look at affectionate communication. In D. O. Braithwaite & P. Schrodt (Eds.), *Engaging theories in interpersonal communication: Multiple perspectives* (2nd ed., pp. 303-314). Thousand Oaks, CA: Sage.

Frable, D. E., Blackstone, T., & Scherbaum, C. (1990). Marginal and mindful: Deviants in social interactions. *Journal of Personality and Social Psychology*, *59*(1), 140.

Foeman, A. & Nance, T. (2002) Building new cultures, reframing old Images: Success strategies of interracial couples, *Howard Journal of Communication*, *13*(3), 237-249, DOI: 10.1080/10646170290109716

Gapstur, S. M., Gann, P. H., Kopp, P., Colangelo, L., Longcope, C., & Liu, K. (2002). Serum androgen concentrations in young men: A longitudinal analysis of associations with age,

obesity, and race.: The CARDIA male hormone study. *Cancer Epidemiology and Prevention Biomarkers*, *11*(10), 1041-1047.

Garcia, R. L., Kenny, D. A., & Ledermann, T. (2015). Moderation in the actor–partner interdependence model. *Personal Relationships*, *22*(1), 8-29. DOI: 10.1111/pere.12060

Gasiorek, J. (2013). "I was impolite to her because that's how she was to me": Perceptions of motive and young adults' communicative responses to underaccommodation. *Western Journal of Communication*, *77*(5), 604–624. doi: 10.1080/10570314.2013.778421

Gasiorek, J., & Giles, H. (2012). Effects of inferred motive on evaluations of nonaccommodative communication. *Human Communication Research*, *38*(3), 309-331.

Gasiorek, J., & Giles, H. (2013). Accommodating the interactional dynamics of conflict management. *Iranian of Society, Culture & Language*, *1*(1), 10-21.

Giles, H. (2008). Communication accommodation theory. In L. A. Baxter & D. O. Braithewaite (Eds.), *Engaging theories in interpersonal communication: Multiple perspectives.* (pp. 161–173). Thousand Oaks, CA: Sage.

Giles, H., Coupland, N., & Coupland, J. (1991). Accommodation theory: Communication, context, and consequence. In *Contexts of accommodation: Developments in applied sociolinguistics (*1-68). NewYork: Cambridge University Press.

Giles, H., & Soliz, J. (2015). Communication accommodation theory: A situated framework for relational, family, and intergroup dynamics. In D. O. Braithwaite & P. Schrodt (Eds.), *Engaging theories in interpersonal communication: Multiple perspectives* (pp. 162 -173). Thousand Oaks, CA: Sage Publications.

Giles, H., Willemyns, M., Gallois, C., & Anderson, M. C. (2007). Accommodating a new

    frontier: The context of law enforcement. In K. Fiedler (Ed.), *Social communication* (pp.

    129–162). New York, NY: Psychology Press.

Gottman, J. M. (2014). *What predicts divorce?: The relationship between marital processes and

    marital outcomes*. New York, NY: Psychology Press.

Gottman, J., Markman, H., & Notarius, C. (1977). The topography of marital conflict: A

    sequential analysis of verbal and nonverbal behavior. *Journal of Marriage and the

    Family, 39*(2), 461-477. doi: 10.2307/350902

Granger, D. A., Shirtcliff, E. A., Booth, A., Kivlighan, K. T., & Schwartz, E. B. (2004). The

    "trouble" with salivary testosterone. *Psychoneuroendocrinology*, *29*(10), 1229-1240.

    doi:10.1016/j.psyneuen.2004.02.005

Grant, V. J., & France, J. T. (2001). Dominance and testosterone in women. *Biological

    Psychology*, *58*(1), 41-47.

Guerrero, L. K., Andersen, P. A., & Afifi, W. A. (2017). *Close encounters: Communication in

    relationships*. Thousand Oaks, CA: Sage Publications.

Harris, M. B. (1992). Sex, race, and experiences of aggression. *Aggressive Behavior*, *18*(3), 201-

    217.

Harwood, J. (2000). Communicative predictors of solidarity in the grandparent-grandchild

    relationship. *Journal of Social and Personal Relationships*, *17*(6), 743-766.

Hendrick, S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and

    the Family, 50,* 93–98.

Hermans, E. J., Putman, P., & Van Honk, J. (2006). Testosterone administration reduces

    empathetic behavior: a facial mimicry study. *Psychoneuroendocrinology*, *31*(7), 859-866.

doi:10.1016/j.psyneuen.2006.04.002

Hojjat, M. (2000). Sex differences and perceptions of conflict in romantic relationships. *Journal of Social and Personal Relationships*, *17*(4-5), 598-617. DOI: 10.1177/0265407500174007

Jónasdóttir, A. G. (1991). *Why women are oppressed*. Temple University Press.

King, M. E., & Theiss, J. A. (2016). The communicative and physiological manifestations of relational turbulence during the empty-nest phase of marital relationships. *Communication Quarterly*, *64*(5), 495-517. DOI: 10.1080/01463373.2015.1129353

Kline, R. B. (2011*). Principles and practice of structural equation modeling and multilevel modeling* (3rd ed.). New York, NY: The Guilford Press.

Knobloch, L. K. (2008). The content of relational uncertainty within marriage. *Journal of Social and Personal Relationships*, *25*(3), 467-495. DOI: 10.1177/0265407508090869

Knobloch, L. K., & Knobloch-Fedders, L. M. (2010). The role of relational uncertainty in depressive symptoms and relationship quality: An actor-partner interdependence model. *Journal of Social and Personal Relationships, 27*(1)*,* 137–159. DOI:10.1177/0265407509348809

Knobloch, L. K., Miller, L. E., & Carpenter, K. E. (2007). Using the relational turbulence model to understand negative emotion within courtship. *Personal Relationships*, *14*(1), 91-112. DOI: 10.1111/j.1475-6811.2006.00143.x

Knobloch, L. K., Satterlee, K. L., & DiDomenico, S. M. (2010). Relational uncertainty predicting appraisals of face threat in courtship: Integrating uncertainty reduction theory and politeness theory. *Communication research*, *37*(3), 303-334. DOI: 10.1177/0093650210362527

Knobloch, L. K., & Solomon, D. H. (1999). Measuring the sources and content of relational

uncertainty. *Communication Studies*, *50*(4), 261-278.

Knobloch, L. K., & Solomon, D. H. (2003). Responses to changes in relational uncertainty

within dating relationships: Emotions and communication strategies. *Communication

Studies*, *54*(3), 282-305. DOI: 10.1080/10510970309363287

Knobloch, L. K., & Theiss, J. A. (2010). An actor—Partner interdependence model of relational

turbulence: Cognitions and emotions. *Journal of Social and Personal

Relationships*, *27*(5), 595-619. DOI: 10.1177/0265407510368967

Knobloch, L. K., & Theiss, J. A. (2011a). Relational uncertainty and relationship talk within

courtship: A longitudinal actor–partner interdependence model. *Communication

Monographs*, *78*(1), 3-26. DOI:10.1080/03637751.2010.542471

Knobloch, L. K., & Theiss, J. A. (2011b). Depressive symptoms and mechanisms of relational

turbulence as predictors of relationship satisfaction among returning service

members. *Journal of Family Psychology*, *25*(4), 470. DOI: 10.1037/a0024063

LaFrance, M., & Henley, N. M. (1994). On oppressing hypotheses: Or differences in nonverbal

sensitivity revisited. In H. L. Radtke & H. J. Stam (Eds.), *Inquiries in social construction.

Power/gender: Social relations in theory and practice* (pp. 287-311). Thousand Oaks,

CA, US: Sage Publications, Inc.

Lakey, S., & Canary, D. (2002). Actor goal achievement and sensitivity to partner as critical

factors in understanding interpersonal communication competence and conflict strategies.

Communication Monographs, *69*(3), 217-235.

Ledermann, T., Macho, S., & Kenny, D. A. (2011). Assessing mediation in dyadic data using the

    actor-partner interdependence model. *Structural Equation Modeling: A Multidisciplinary*

    Journal, *18*(4), 595-612. DOI: 10.1080/10705511.2011.607099

Maner, J. K., Miller, S. L., Schmidt, N. B., & Eckel, L. A. (2008). Submitting to defeat: Social

    anxiety, dominance threat, and decrements in testosterone. *Psychological Science*, *19*(8),

    764-768.

Mazur, A., & Michalek, J. (1998). Marriage, divorce, and male testosterone. *Social*

    Forces, *77*(1), 315-330.

Mehta, P. H., & Josephs, R. A. (2006). Testosterone change after losing predicts the decision to

    compete again. *Hormones and Behavior*, *50*(5), 684-692.

    doi:10.1016/j.yhbeh.2006.07.001

Mehta, P. H., & Josephs, R. A. (2010). Testosterone and cortisol jointly regulate dominance:

    Evidence for a dual-hormone hypothesis. *Hormones and Behavior*, *58*(5), 898–906.

    doi:10. 1016/j.yhbeh.2010.08.020

Nelson, R. J. (2011). An introduction to behavioral endocrinology (4th ed.). Sunderland, MA:

    Sinauer Associates, Inc.

Olweus, D., Mattsson, A., Schalling, D., & Loew, H. (1988). Circulating testosterone levels and

    aggression in adolescent males: a causal analysis. *Psychosomatic medicine*, *50*(3), 261-

    272.

Peters, B. J., Hammond, M. D., Reis, H. T., & Jamieson, J. P. (2016). The consequences of

    having a dominant romantic partner on testosterone responses during a social interaction.

    Psychoneuroendocrinology, *74*, 308-315.

    http://dx.doi.org/10.1016/j.psyneuen.2016.09.024

Popma, A., Vermeiren, R., Geluk, C. A. M. l., Rinne, T., van den Brink, W., Knol, D. l., Jansen,

l. M. C., van Engeland, H., & Doreleijers, T. A. H. (2007). Cortisol moderates the

relationship between testosterone and ag- gression in delinquent male adolescents.

Biological Psychiatry, *61*(3), 405-411. doi: 10.1016/j.biopsych.2006.06.006

Putnam, L. L. (2006). Definitions and approaches to conflict and communication. In J. G. Oetzel

& S. Ting-Toomey (Eds.), *The SAGE handbook of conflict and communication* (pp. 1-

32). Thousand Oaks, CA: Sage.

Roney, J. R., & Gettler, L. T. (2015). The role of testosterone in human romantic relationships.

Current Opinion in Psychology, *1*, 81-86.

Rowe, R., Maughan, B., Worthman, C. M., Costello, E. J., & Angold, A. (2004). Testosterone,

antisocial behavior, and social dominance in boys: Pubertal development and biosocial

interaction. *Biological psychiatry*, *55*(5), 546-552. DOI: 10.1016/j.biopsych.2003.10.010

Schneiderman, I., Kanat-Maymon, Y., Zagoory-Sharon, O., & Feldman, R. (2014). Mutual

influences between partners' hormones shape conflict dialog and relationship duration at

the initiation of romantic love. *Social Neuroscience*, *9*(4), 337-351.

http://dx.doi.org/10.1080/17470919.2014.893925

Siegert, J. R., & Stamp, G. H. (1994). "Our first big fight" as a milestone in the development of

close relationships. *Communications Monographs*, *61*(4), 345-360.

Sillars, A., Canary, D. J., & Tafoya, M. (2004) Communication, conflict, and the quality of

family relationships. In A. L. Vangelesti (Ed.) *Handbook of Family Communication* (pp.

413-446). Mahwah, NJ: Lawrence Erlbaum Associates.

Soliz, J., & Giles, H. (2014). Relational and identity processes in communication: A contextual

and meta-analytical review of Communication Accommodation Theory. *Annuals of the*

International Communication Association

Solomon, D. H. (2016). Relational turbulence model. In C.R. Berger & M. E. Roloff (Eds.). *The*

International Encyclopedia of Interpersonal Communication. Retrieved from Wiley

Online Library. DOI:10.1002/9781118540190.wbeic0174

Solomon, D. H., & Knobloch, L. K. (2001). Relationship uncertainty, partner interference, and

intimacy within dating relationships. *Journal of Social and Personal Relationships*,

18(6), 804-820.

Solomon, D. H., & Knobloch, L. K. (2004). A model of relational turbulence: The role of

intimacy, relational uncertainty, and interference from partners in appraisals of irritations.

Journal of Social and Personal Relationships, *21*(6), 795-816.

Speer, R. B., Giles, H., & Denes, A. (2013). Investigating stepparent-stepchild interactions: The

role of communication accommodation. *Journal of Family Communication*, *13*(3), 218-

241. doi: 10.1080/15267431.2013.768248

Stafford, L., & Canary, D. J. (1991). Maintenance strategies and romantic relationship type,

gender and relational characteristics. *Journal of Social and Personal relationships*, *8*(2),

217-242.

Stafford, L., Dainton, M., & Haas, S. (2000). Measuring routine and strategic relational

maintenance: Scale revision, sex versus gender roles, and the prediction of relational

characteristics. *Communications Monographs*, *67*(3), 306-323.

Thakerar, J. N., Giles, H., & Cheshire, J. (1982). Psychological and linguistic parameters of

speech accommodation theory. In C. Fraser & K. R. Scherer (Eds.), *Advances in the*

social psychology of language (pp. 205–255). Cambridge, UK: Cambridge University Press.

Theiss, J. A., Estlein, R., & Weber, K. M. (2013). A longitudinal assessment of relationship characteristics that predict new parents' relationship satisfaction. *Personal Relationships*, *20*(2), 216-235. DOI: 10.1111/j.1475-6811.2012.01406.x

Theiss, J. A., & Knobloch, L. K. (2014). Relational turbulence and the post-deployment transition: Self, partner, and relationship focused turbulence. *Communication Research*, *41*(1), 27-51. DOI: 10.1177/0093650211429285

Theiss, J. A., Knobloch, L. K., Checton, M. G., & Magsamen-Conrad, K. (2009). Relationship characteristics associated with the experience of hurt in romantic relationships: A test of the relational turbulence model. *Human Communication Research*, *35*(4), 588-615. doi:10.1111/j.1468-2958.2009.01364.x

Theiss, J. A., & Nagy, M. E. (2012). A cross-cultural test of the relational turbulence model: Relationship characteristics that predict turmoil and topic avoidance for Koreans and Americans. *Journal of Social and Personal Relationships*, *29*(4), 545-565. DOI: 10.1177/0265407512443450

Theiss, J. A., & Solomon, D. H. (2006). A relational turbulence model of communication about irritations in romantic relationships. *Communication Research*, *33*(5), 391-418. DOI: 10.1177/0093650206291482

van Anders, S. M. (2013). Beyond masculinity: testosterone, gender/sex, and human social behavior in a comparative context. *Frontiers in Neuroendocrinology*, *34*(3), 198-210. http://dx.doi.org/10.1016/j.yfrne.2013.07.001

van Anders, S. M., Goldey, K. L., & Kuo, P. X. (2011). The Steroid/Peptide Theory of Social

      Bonds: Integrating testosterone and peptide responses for classifying social behavioral

      contexts. *Psychoneuroendocrinology*, *36*(9), 1265-1275.

      doi:10.1016/j.psyneuen.2011.06.001

van Anders, S. M., Hamilton, L. D., Schmidt, N., & Watson, N. V. (2007c). Associations

      between testosterone secretion and sexual activity in women. *Hormones and Behavior*,

      51(4), 477–482. doi:10.1016/j.yhbeh.2007.01.003

van Anders, S. M., Hamilton, L. D., & Watson, N. V. (2007). Multiple partners are associated

      with higher testosterone in North American men and women. *Hormones and*

      Behavior, *51*(3), 454-459. DOI: 10.1016/j.yhbeh.2007.01.002

van Anders, S. M., & Watson, N. V. (2006). Social neuroendocrinology: Effects of Social

      Contexts and Behaviors on Sex Steroids in Humans. *Human Nature*, *17*(2), 212-237.

van Anders, S. M., & Watson, N. V. (2007). Testosterone levels in women and men who are

      single, in long-distance relationships, or same-city relationships. *Hormones and*

      Behavior, *51*(2), 286-291.Doi: 10.1016/j.yhbeh.2006.11.005

van Bokhoven, I., Van Goozen, S. H., Van Engeland, H., Schaal, B., Arseneault, L., Séguin, J.

      R., ... & Tremblay, R. E. (2006). Salivary testosterone and aggression, delinquency, and

      social dominance in a population-based longitudinal study of adolescent

      males. *Hormones and Behavior*, *50*(1), 118-125.

van Honk, J., Tuiten, A., Verbaten, R., van den Hout, M., Koppeschaar, H., Thijssen, J., & de

      Haan, E. (1999). Correlations among salivary testosterone, mood, and selective attention

      to threat in humans. *Hormones and Behavior*, *36*(1), 17-24.

van Honk, J., Tuiten, A., Hermans, E., Putnam, P., Koppeschaar, H., Thijssen, J., ... & van Doornen, L. (2001). A single administration of testosterone induces cardiac accelerative responses to angry faces in healthy young women. *Behavioral neuroscience*, *115*(1), 238.

Wardecker, B. M., Smith, L. K., Edelstein, R. S., & Loving, T. J. (2015). Intimate relationships then and now: How old hormonal processes are influenced by our modern psychology. *Adaptive Human Behavior and Physiology*, *1*(2), 150-176. doi 10.1007/s40750-015-0021-9.

Welling, L. L., Moreau, B. J., Bird, B. M., Hansen, S., & Carré, J. M. (2016). Exogenous testosterone increases men's perceptions of their own physical dominance. *Psychoneuroendocrinology*, *64*, 136-142. Doi: https://doi.org/10.1016/j.psyneuen.2015.11.016

Wirth, M. M., & Schultheiss, O. C. (2007). Basal testosterone moderates responses to anger faces in humans. *Physiology & Behavior*, *90*(2-3), 496-505.

Zilioli, S., & Watson, N. V. (2014). Testosterone across successive competitions: Evidence for a 'winner effect' in humans?. *Psychoneuroendocrinology*, *47*, 1-9.

Appendix A: Tables

Table 1: *Means and standard deviations of men and women's scores on key variables and correlations between men and women's scores.*

	Men		Women		
	M	*SD*	*M*	*SD*	*r*
1. Testosterone Time 1	167.13	54.81	75.19	33.28	.16
2. Testosterone Time 2	177.00	60.83	76.16	40.40	.01
3. Perceived partner accommodation	5.35	1.03	5.65	1.00	.66**
4. Perceived partner nonaccommodation	2.32	1.23	2.00	1.09	.51**
5. Self uncertainty	2.03	1.30	1.63	.88	.60**
6. Partner uncertainty	2.04	1.37	1.81	1.13	.58**
7. Relationship uncertainty	2.04	1.24	1.71	.96	.58**
8. Relationship Satisfaction	4.27	.66	4.34	.56	.71**

Table 2: *Correlations between the key variables.*

	1	2	3	4	5	6	7	8
1. Testosterone Time 1	-	.89**	-.27*	.40**	.04	-.04	.02	-.02
2. Testosterone Time 2	.93**	-	-.19	.34**	.04	.00	.05	-.10
3. Perceived partner accommodation	-.06	-.12	-	-.73**	-.53**	-.38**	-.51**	.49**
4. Perceived partner nonaccommodation	.27*	.28*	-.71**	-	.44**	.42**	.48**	-.54**
5. Self uncertainty	.02	.07	-.45**	.33**	-	.87**	.95**	-.74**
6. Partner uncertainty	.10	.13	-.53**	.46**	.89**	-	.90**	-.75**
7. Relationship uncertainty	.05	.10	-.53**	.43**	.93**	.90**	-	-.76**
8. Relationship Satisfaction	-.04	-.05	.49**	-.43**	-.64**	-.63**	-.58**	-

Note: Values above the diagonal indicate women's scores; values below the diagonal indicate men's

Appendix B: Figures

Figure 1
Moderated mediation model predicting associations between partner accommodation, baseline testosterone, relational uncertainty, and relationship satisfaction.
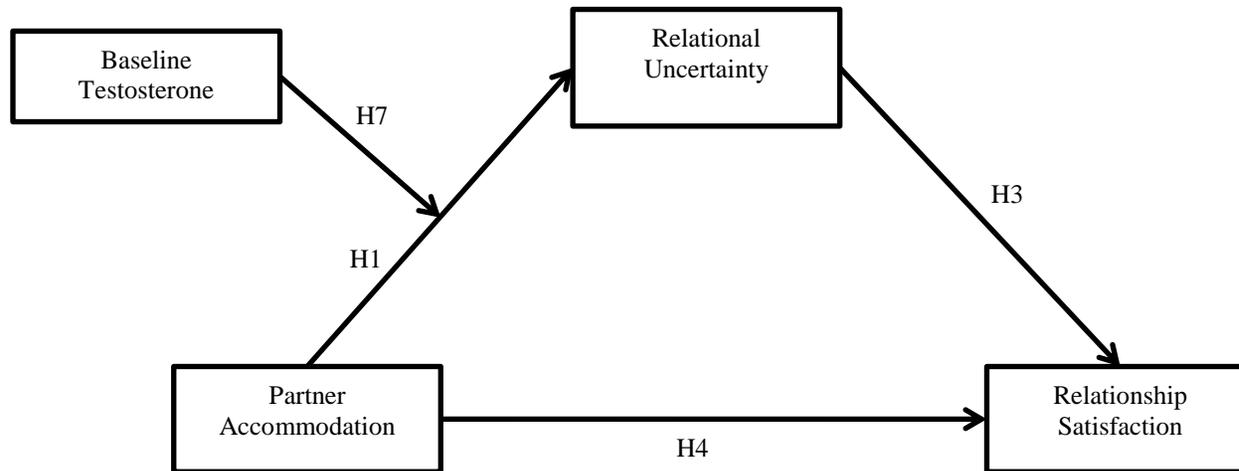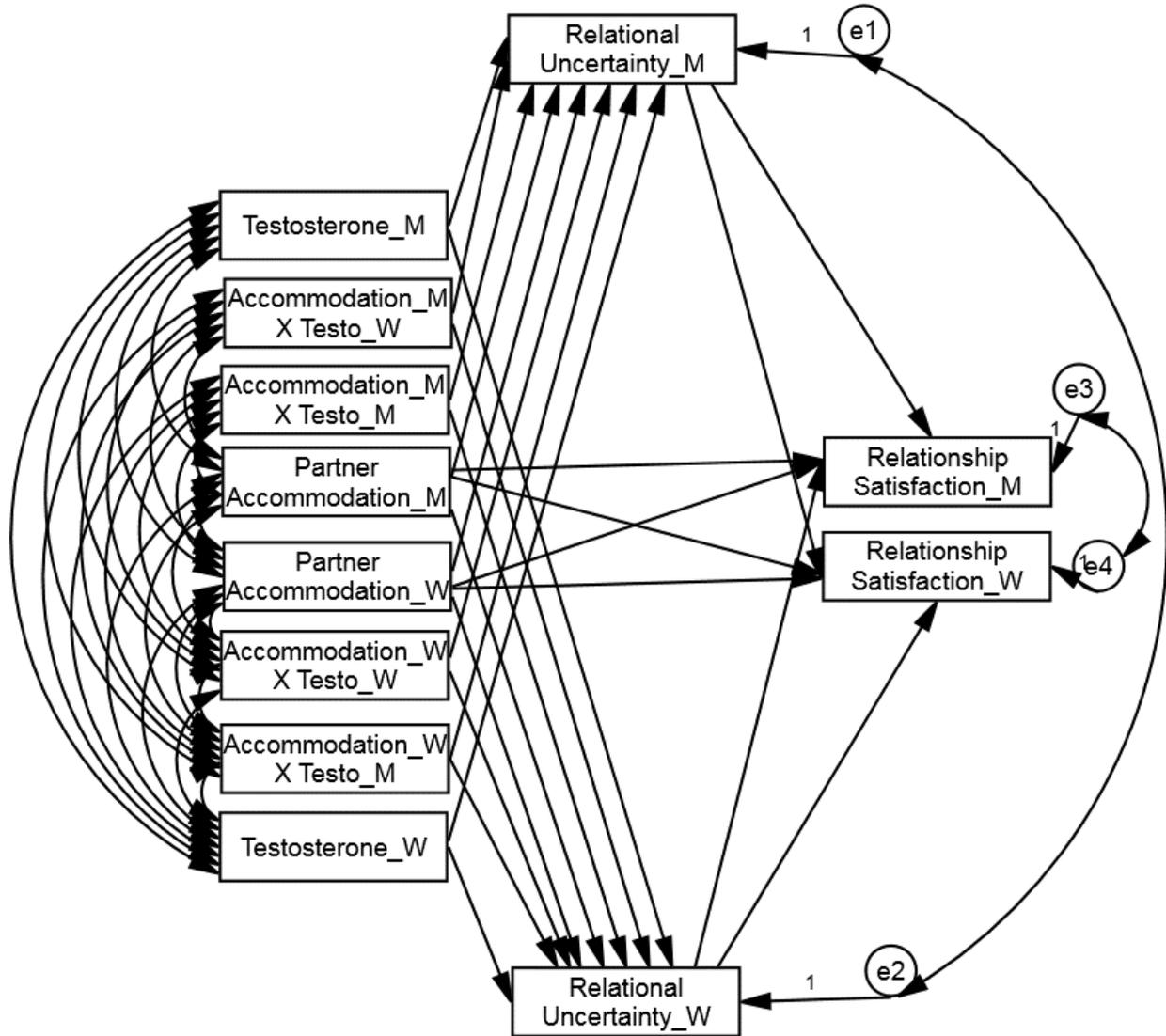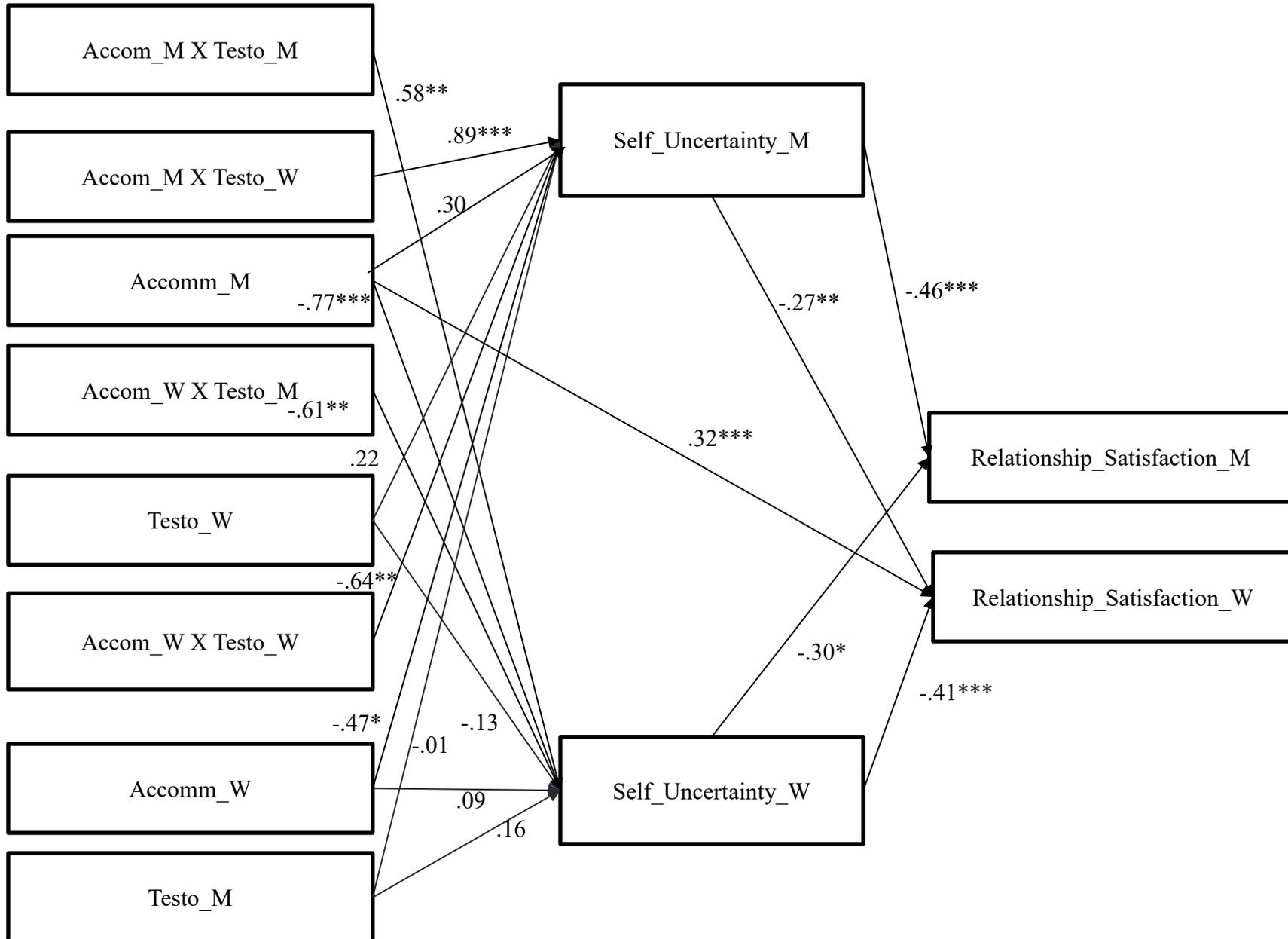
Figure 2

Moderated mediation model predicting associations between partner nonaccommodation, baseline testosterone, relational uncertainty, and relationship satisfaction.
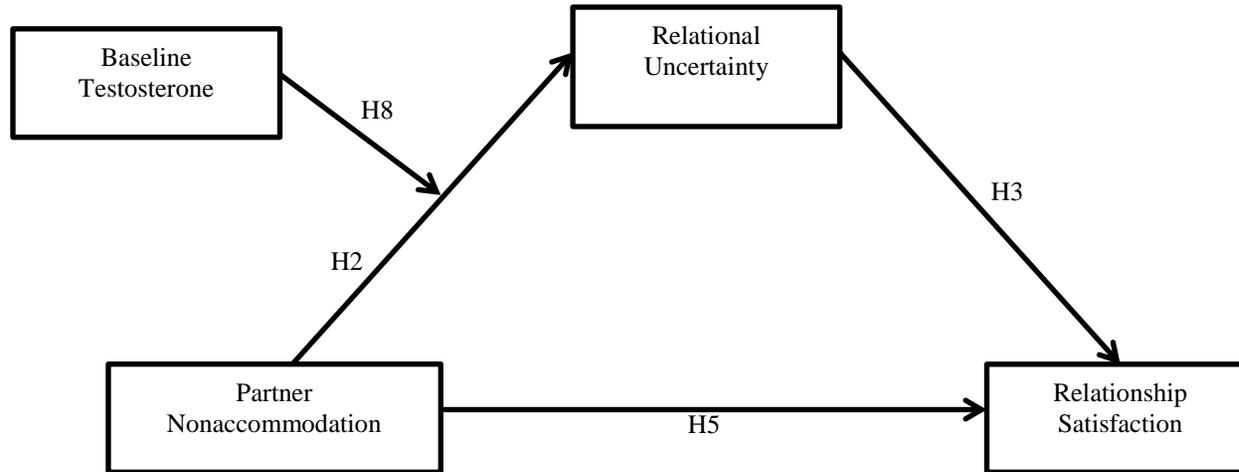
Figure 3: *Actor partner interdependence mediation model* (Ledermann et al., 2011)
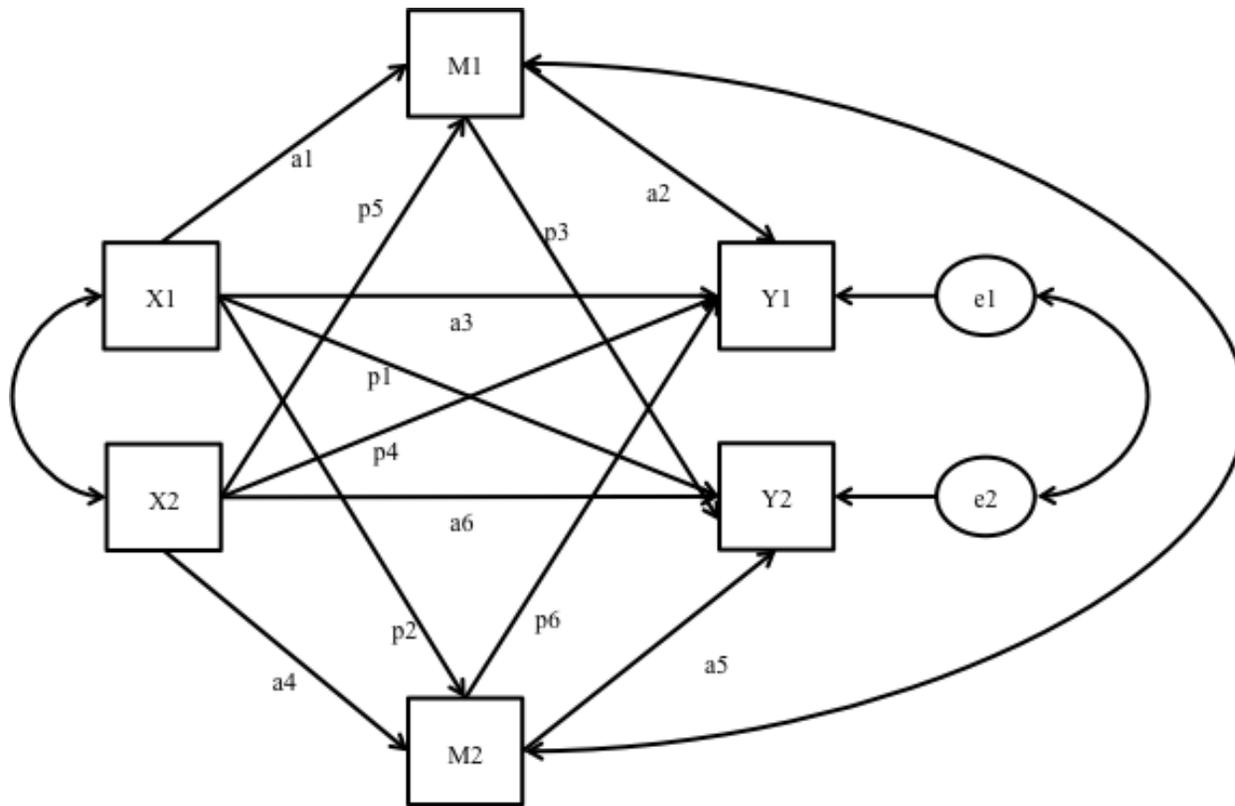
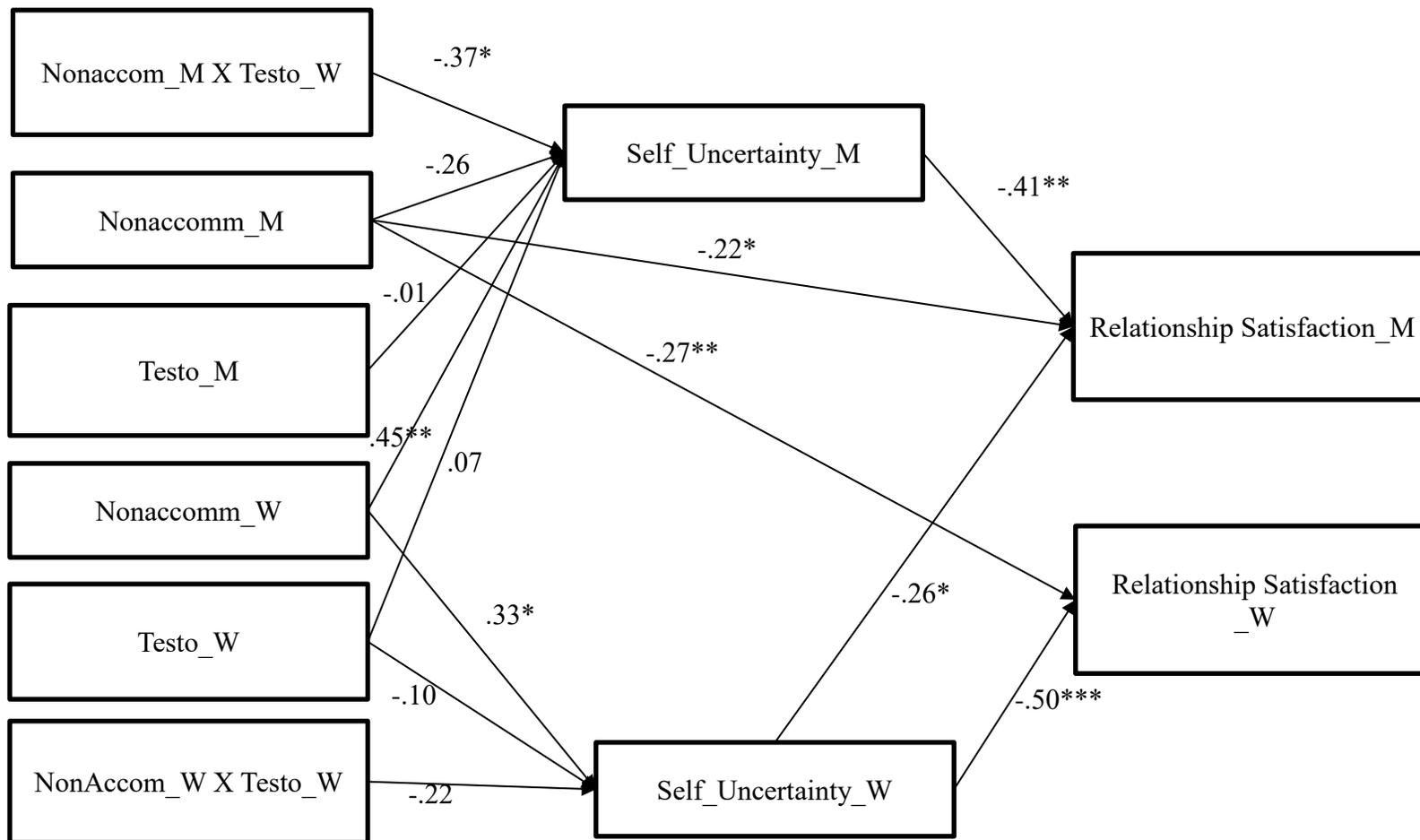Figure 4: *Actor partner interdependence moderation model* (Garcia et al., 2015)
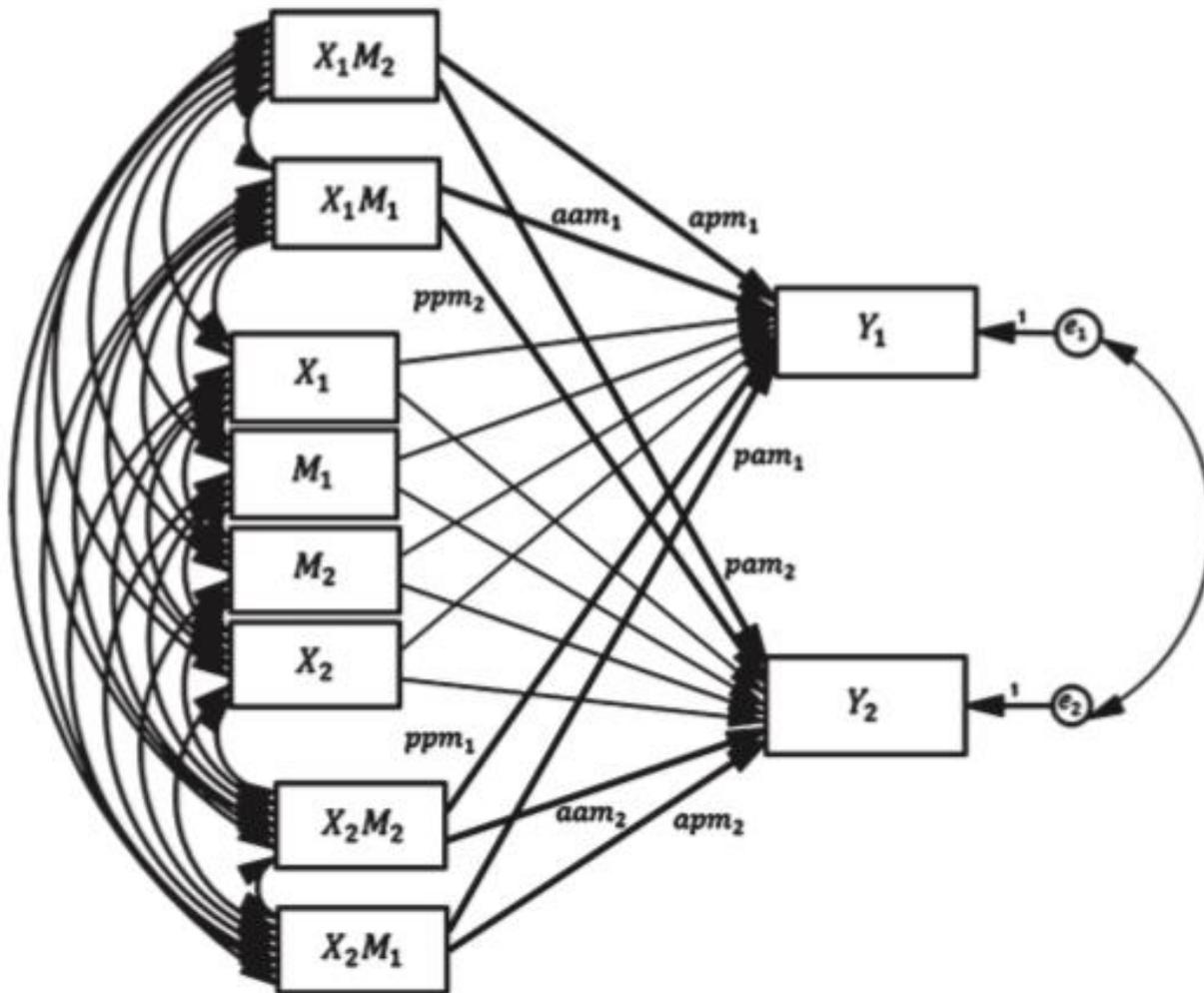
Figure 5: *Proposed actor partner interdependence moderated mediation model predicting associations between partner accommodation, baseline testosterone, relational uncertainty, and relationship satisfaction.*
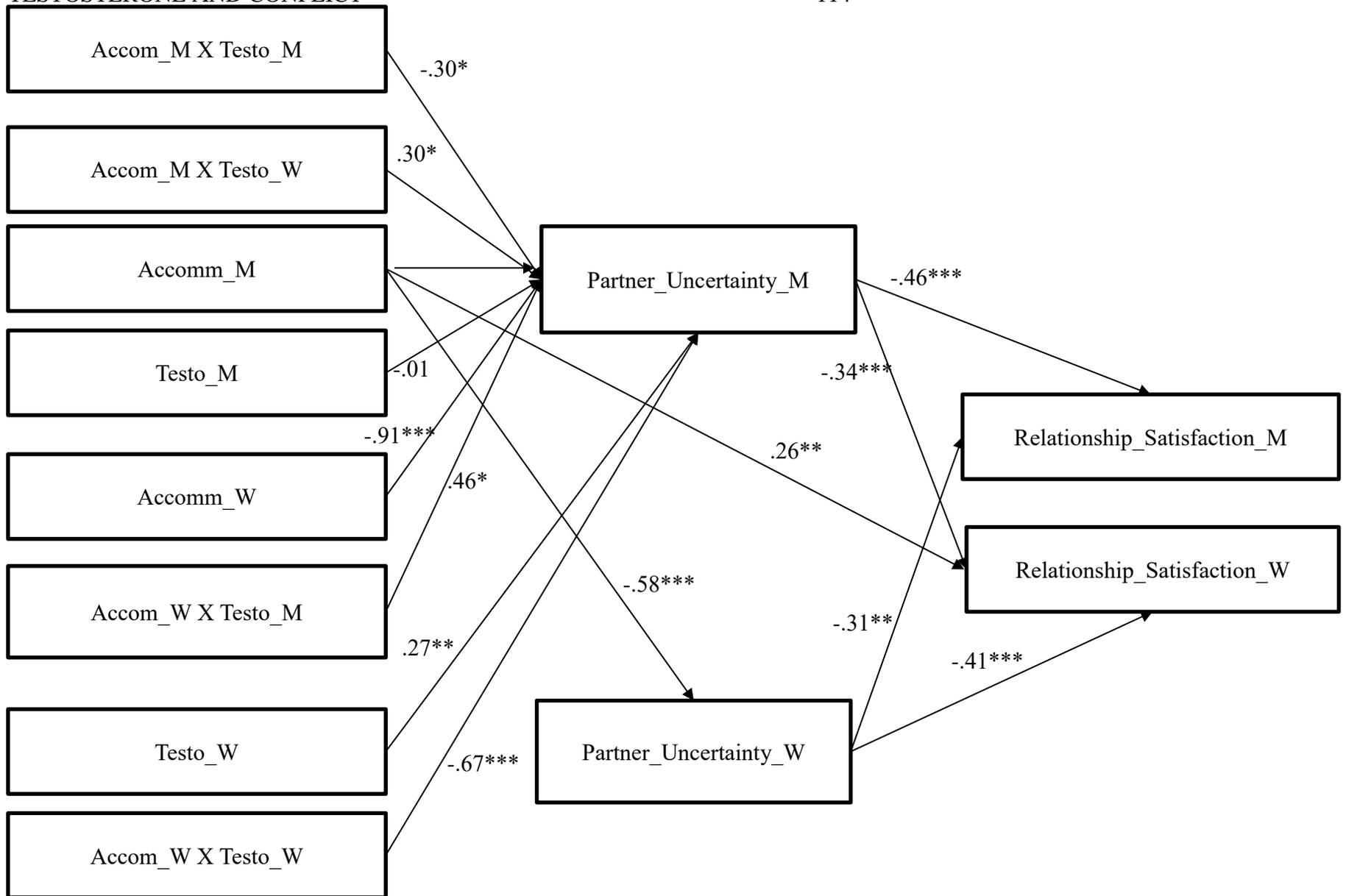
Figure 6: *Proposed actor partner interdependence moderated mediation model predicting associations between partner nonaccommodation, baseline testosterone, relational uncertainty, and relationship satisfaction.*
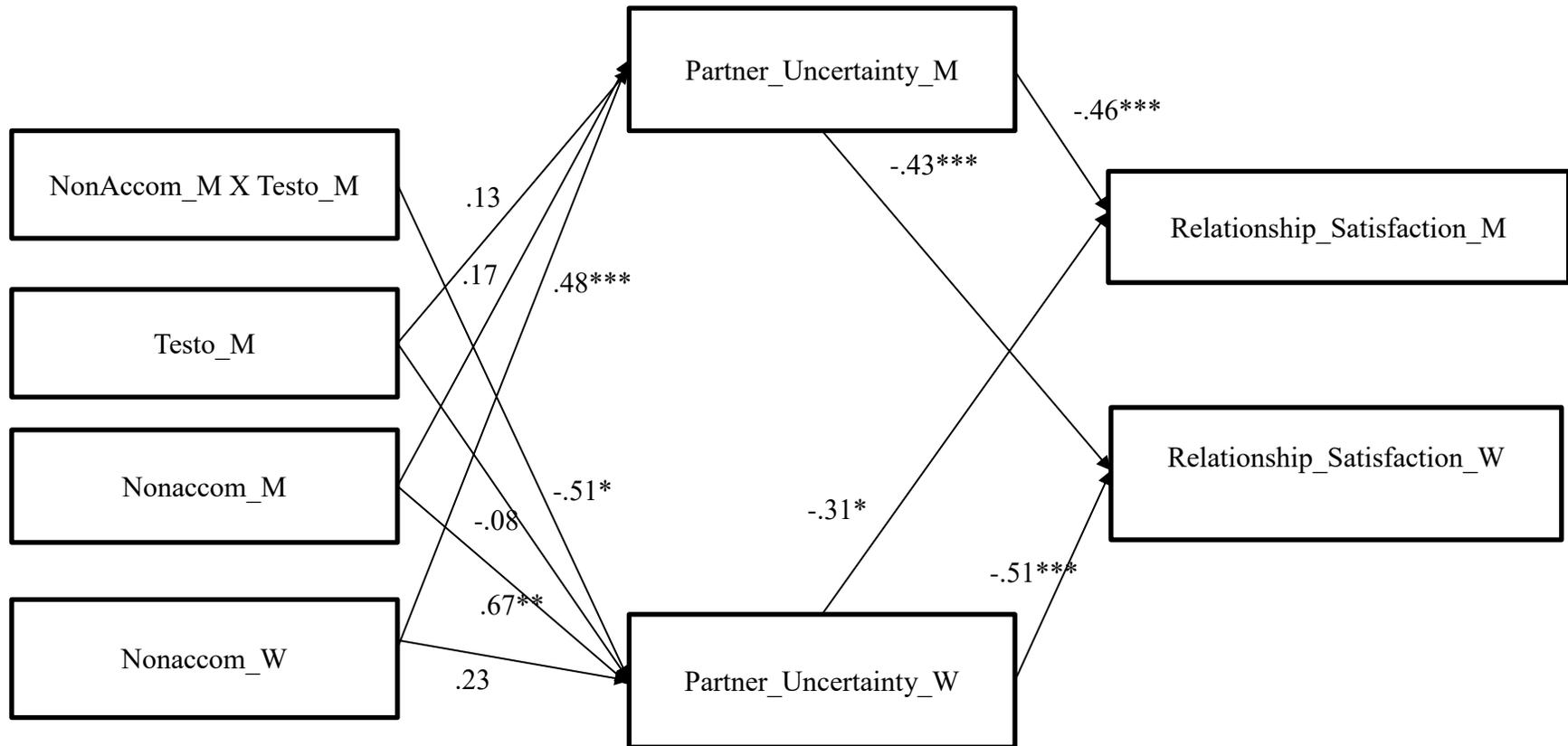
Figure 7: *Accepted actor partner interdependence moderated mediation model predicting associations between partner accommodation, baseline testosterone, self uncertainty, and relationship satisfaction.*

Figure 8: *Accepted actor partner interdependence moderated mediation model predicting associations between partner nonaccommodation, baseline testosterone, self uncertainty, and relationship satisfaction.*

Figure 9: *Accepted actor partner interdependence moderated mediation model predicting associations between partner accommodation, baseline testosterone, partner uncertainty, and relationship satisfaction.*

Figure 10: *Accepted actor partner interdependence moderated mediation model predicting associations between partner nonaccommodation, baseline testosterone, partner uncertainty, and relationship satisfaction.*

Figure 11: *Accepted actor partner interdependence moderated mediation model predicting associations between partner accommodation, baseline testosterone, relationship uncertainty, and relationship satisfaction.*
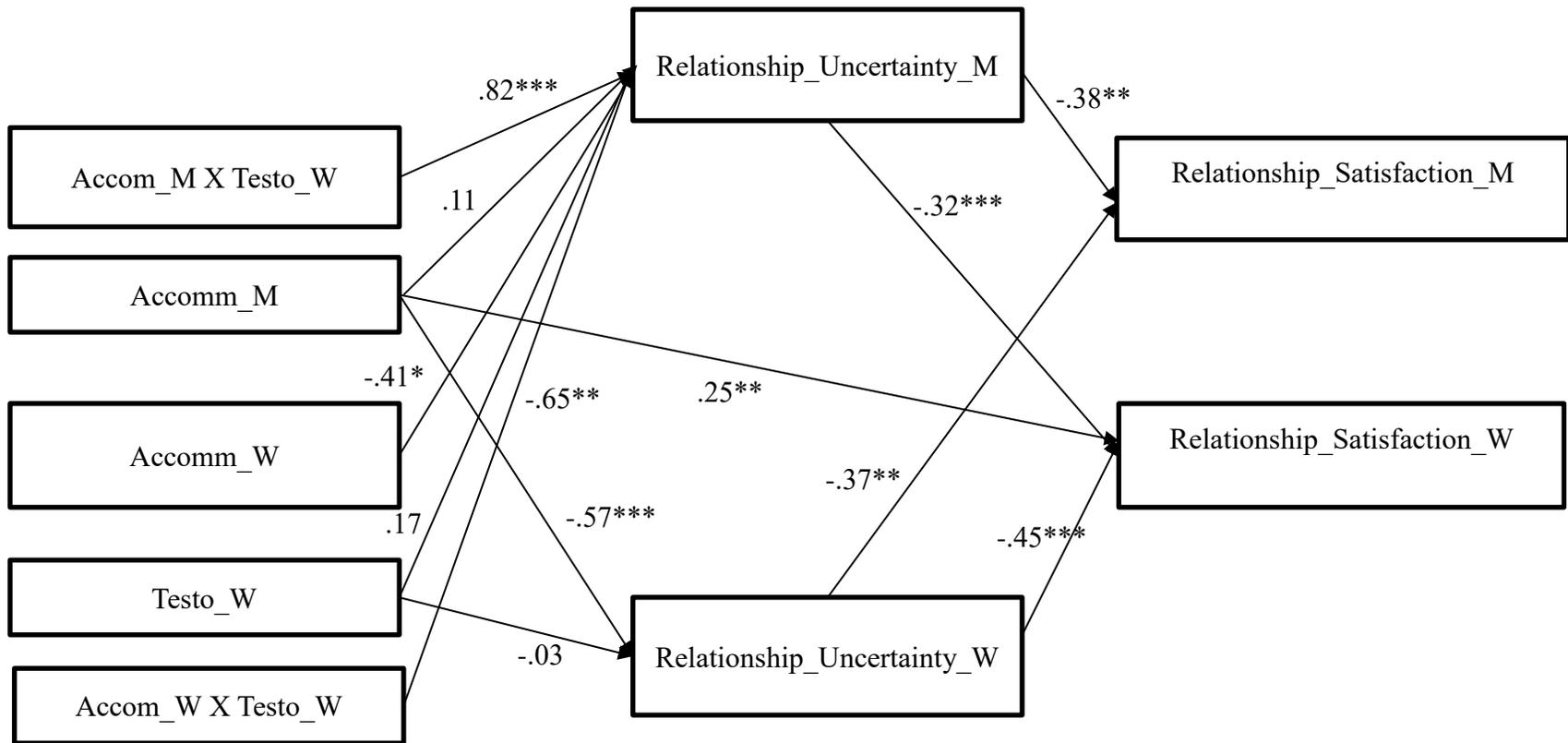
Figure 12: *Accepted actor partner interdependence moderated mediation model predicting associations between partner nonaccommodation, baseline testosterone, relationship uncertainty, and relationship satisfaction.*
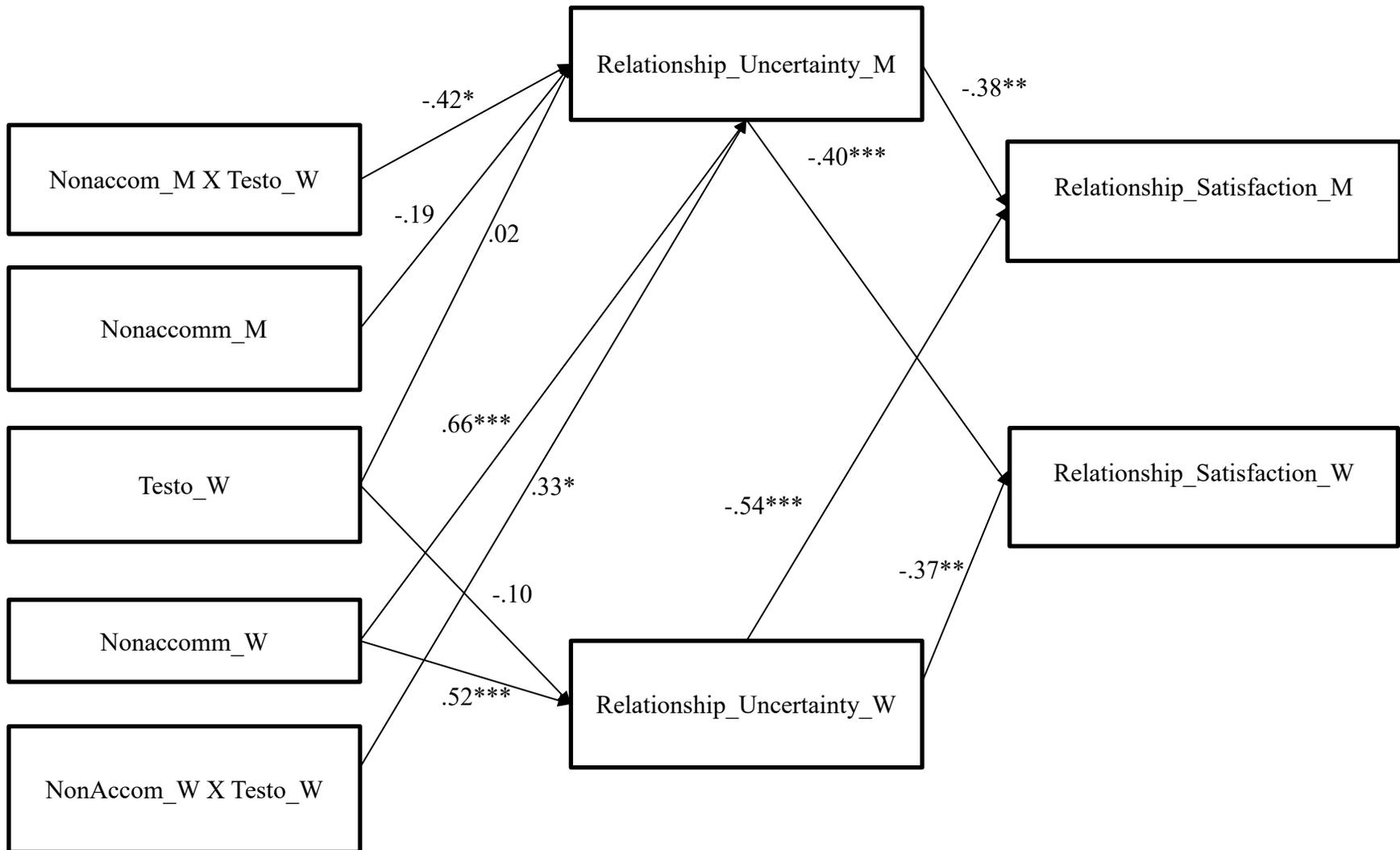
Figure 13: *Actor partner interdependence model predicting associations between baseline testosterone (T1), partner accommodation, and post conflict testosterone (T2).*
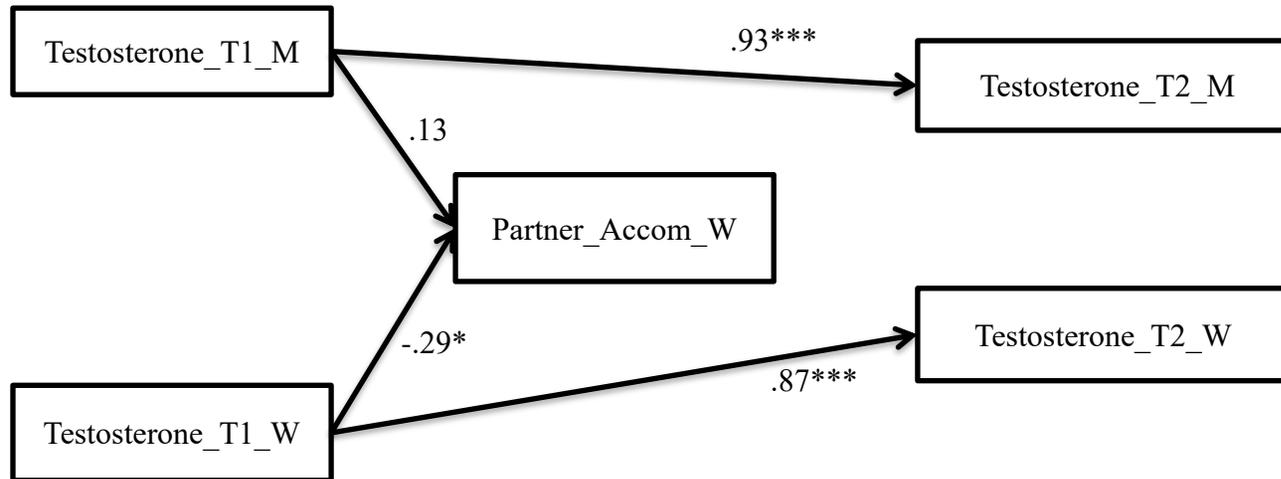
Figure 14: *Actor partner interdependence model predicting associations between baseline testosterone (T1), partner nonaccommodation, and post conflict testosterone (T2).*